ARCHITECTURE

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Edmund B. Gilchrist

By Rayne Adams

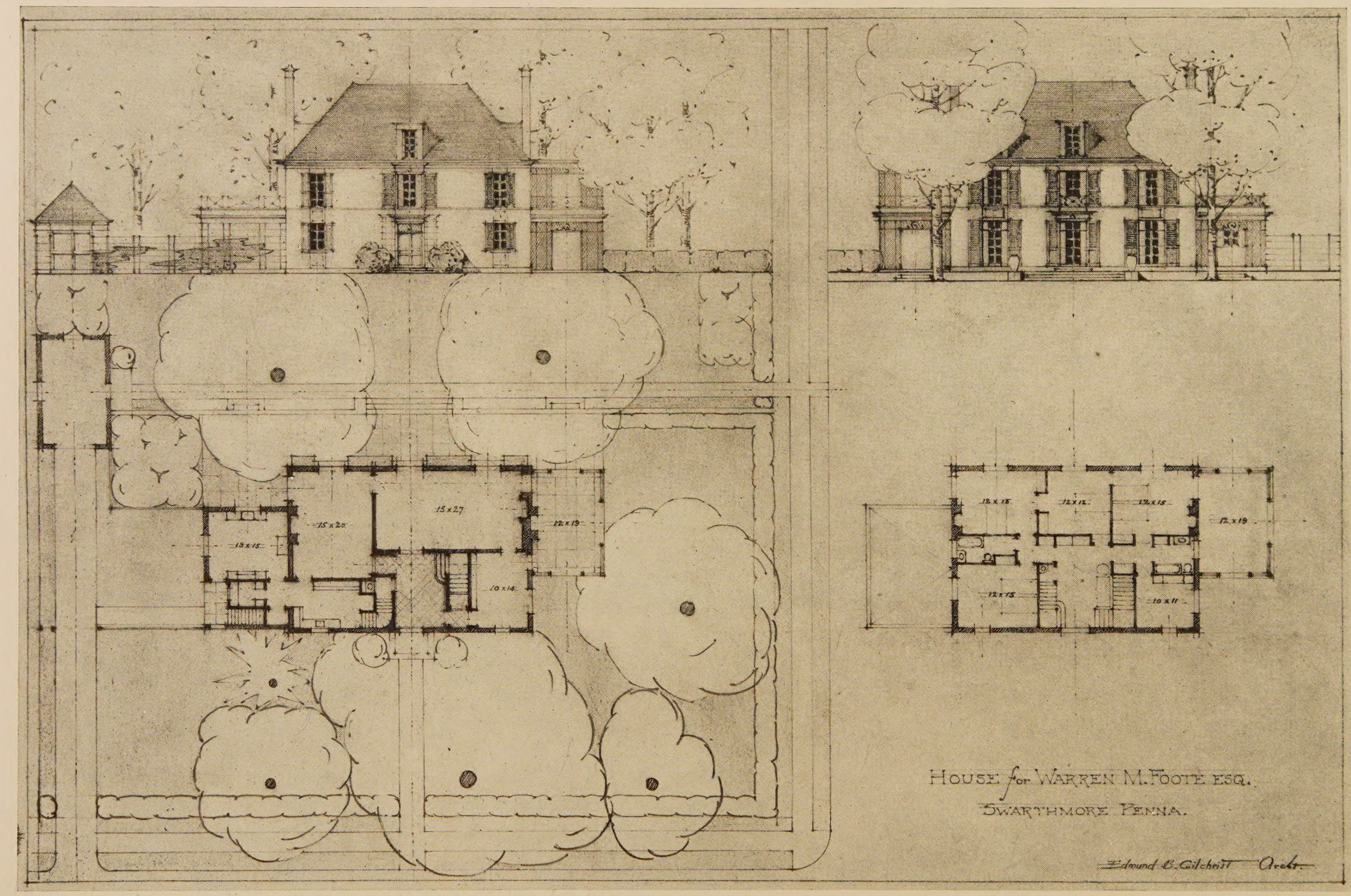
PANDORA'S BOX, according to the legend, "contained all the blessings of the gods, and these would have been preserved for the human race had not Pandora opened the box, thus permitting the winged blessings to escape irretrievably." Pandora may have been careless and perhaps indifferent as to their escape. If another, such as Saint Francis, had opened the box, some of the winged blessings would have returned to be sermonized. Or, again, if Napoleon had opened it, he would have attempted to bring some of them down by shooting them dead with his largest cannon.

Pandora's box is protean; in one of its forms it is the arcanum which contains the winged fantasies of architecture. Some, interested in architecture, use a key to unlock it, decorously; others use a broadaxe. In either case the result is the same, for as soon as the conceptions held by the box are liberated they escape forever, leaving behind them only their ghosts. For every architectural conception, by the very fact of its expression, loses something vital. The Parthenon was not, in all probability, all that its designer dreamed it would be.

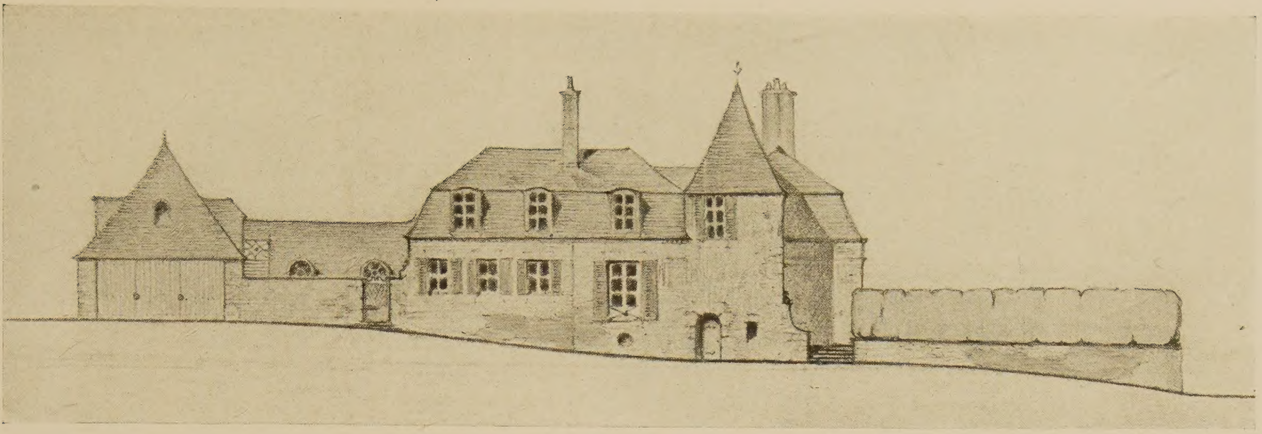
And since this article is concerned with the work of Edmund B. Gilchrist, one may justifiably speculate on how his approach to architecture is made. Metaphorically, its proper time would be not in the glare of mid-day, but at dawn or in the twilight of evening. In some dark pool, surrounded by soft meadows, he discovers, not Pandora's box, but one equally mysterious. And I imagine that he does not hastily bring it to the surface and crack it open; rather he is inclined to stand watching it, imagining what is hidden within it. Perhaps he even goes away without opening the box at all; I am sure, if he does open it, releasing the winged prisoners, he doesn't attempt to bring them down with a gun. He beguiles them—very likely with a *motif* from Brahms. Even then, he doesn't wish them to become too rapidly familiar: it is best if they remain at a little distance so as not to lose their mystery.

By way of concrete example, I suppose that Gilchrist's objection to studying his architecture by the use of clay models is a reflection of this attitude. The model, armed with a sort of invincible validity, has a disconcerting way of turning upon him and exclaiming: "There! you see how those two roofs intersect!" Perhaps, for Gilchrist, the model too quickly freezes his ideas, and his fancy is borne down by the weight of its clothes. Though the sterile clay and the amorphous plasticine may help to verify our geometry, they fail lamentably in giving a proper sense of values. And architecture is, after all, only the composition of values.

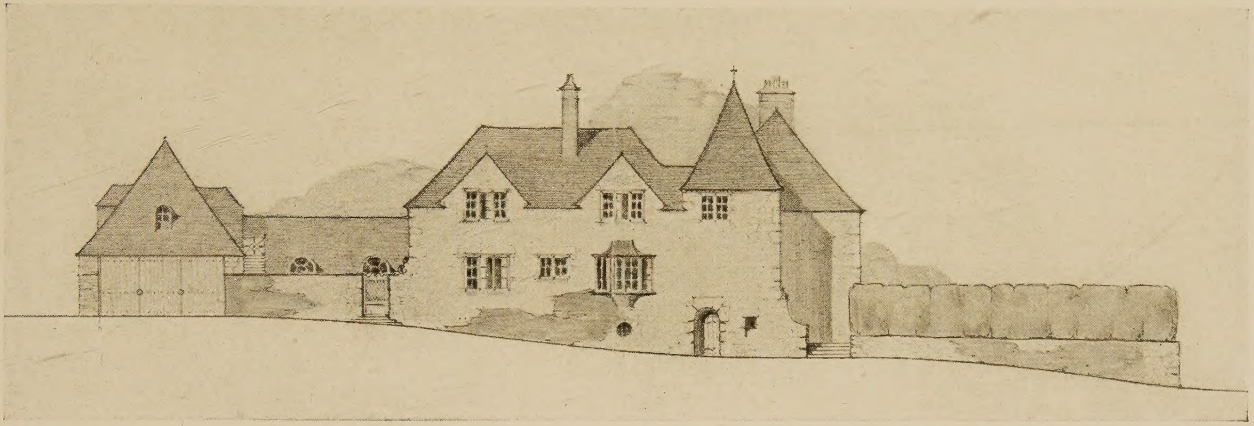
Yet his rebellion against the importunities of the model is a mild one; and it should be added that Gilchrist sometimes makes models of his houses—not of clay or plasticine, but of white soap, though usually these are made after the house has been designed on paper. The whole process of giving objective expression to his architectural conceptions is done really through



Typical preliminary sketches for a small house, with Gilchrist's meticulous attention to the existing trees



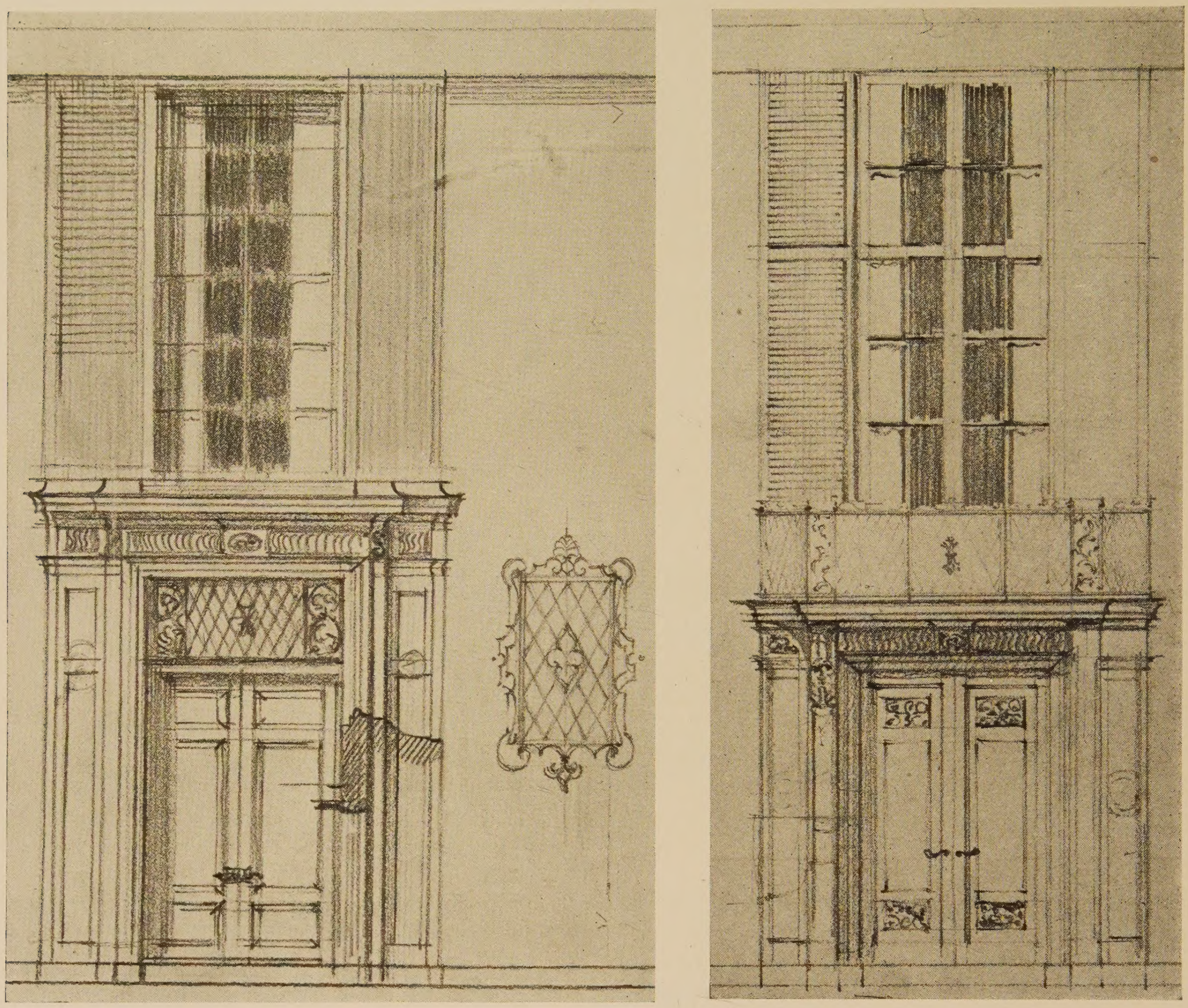
Above and below, alternate preliminary studies in pencil and water-color for a country-house elevation



the medium of the humble yet versatile pencil, and it is quite devoid of spectacular characteristics. *Simplissima simplicitas.* One has only to look at Gilchrist's work to sense the applicability of the phrase. Yet this simplicity does not preclude the interest which comes from contrasting values skilfully handled. And the achievement of this limpidity of expression has not been acquired, in Gilchrist's case, through his architectural training alone. While one may not hope to interpret one art in terms of another without coming in the end to grief, yet it is possible in many instances to trace certain correspondences. It is not for nothing that Gilchrist has for long been an accomplished musician; it is, in tracing the correspondence between his thought in music and in architecture, of interest to note that he believes in Brahms as Mohammed believed in Allah. I wonder if one is not right in detecting in Gilchrist's architecture an expression of the same feeling that pervades the master's music. Is there not in it the same sense of clarity, of cool reflection, the same absence of exaggeration, the same sophisticated decorousness?

Many years ago Ingersoll wrote of Beecher: "His thoughts were moulded by the graceful curves of streams, by winding paths in woods, the charm of quiet country roads, and lanes grown indistinct with weeds and grass, by vines that cling and hide with leaf and flower the crumbling wall's decay. . . ." If I were to choose a text to characterize Gilchrist's attitude toward architecture, I would take this miracle of speech. For to Gilchrist architecture means—in its rural expressions—not only buildings, but trees and gardens. Most architects are content to leave the trees to the landscape architect. Gilchrist's best known and most characteristic work is rural domestic architecture, and Fate has favored him with opportunities to show his talent in the designing of ample estates. Yet no matter how important the house may be in itself, it is for him but an incident, like many others, in the scheme. Let us follow the steps which he takes when he starts out to conquer a new problem—the designing, let us say, of a country estate of generous size.

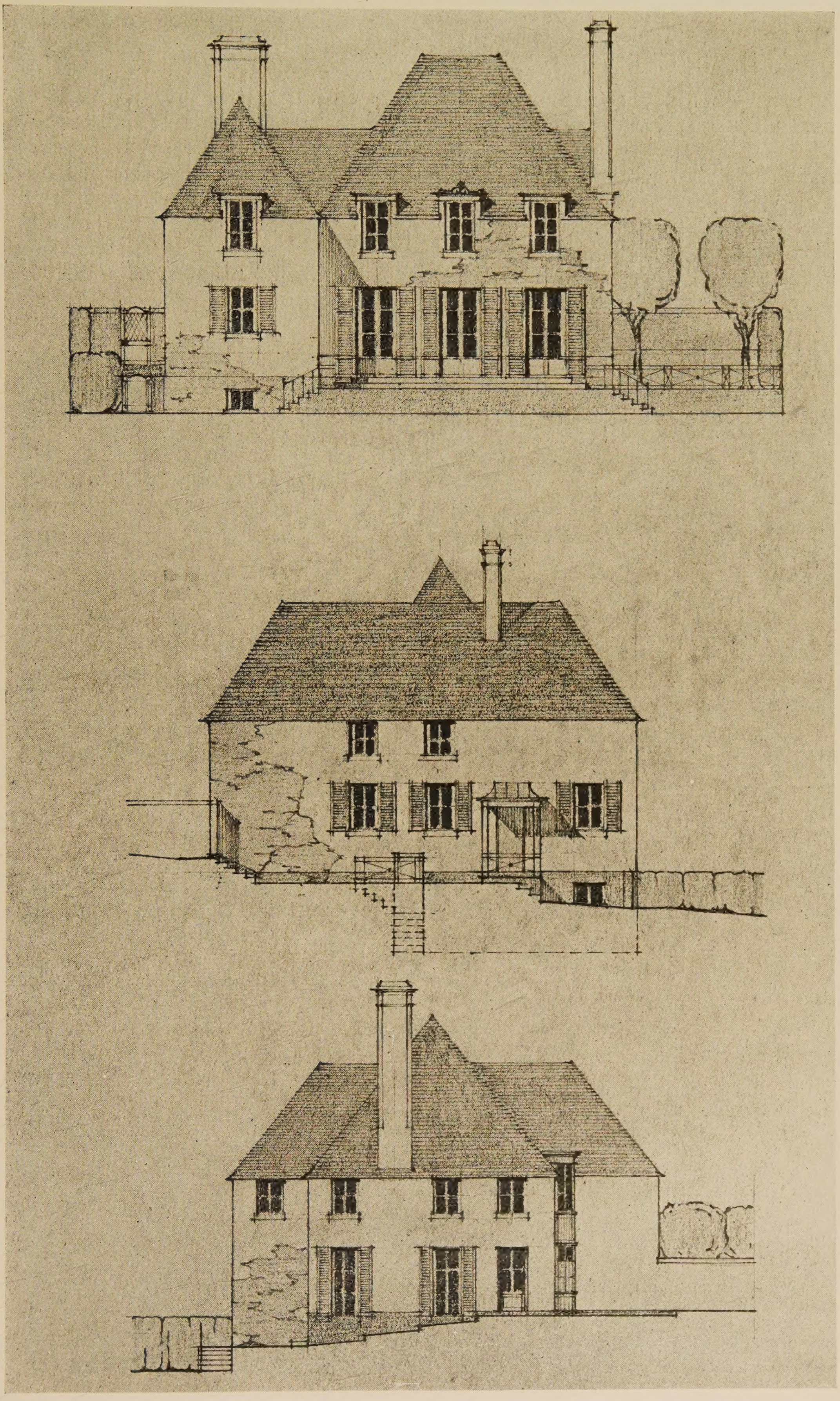
The militaristic term, "conquer," is not altogether out of place in spite of its apparent in-



Alternate studies for an entrance detail; originals at half-inch scale

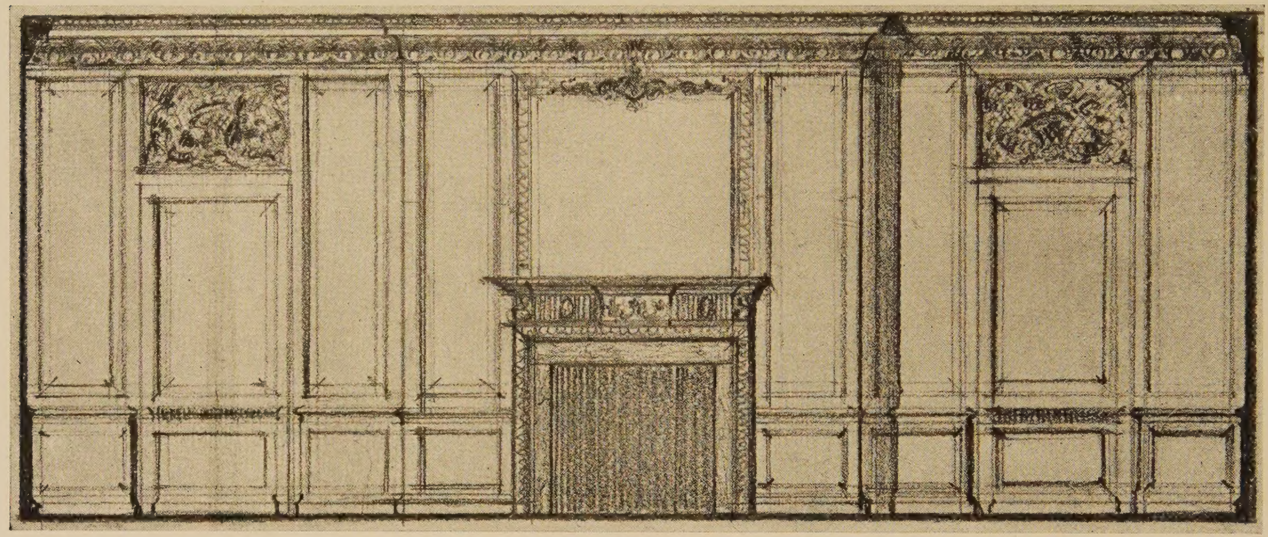
congruity with Gilchrist's nature, for he follows the tactics accredited to the late General Foch at the close of the Great War. He proceeds to execute a huge encircling movement. That is, having come from the outer world to the boundaries of the estate, he begins, in his own words, "at the edges and works in." He has never forgotten Mr. Platt's question: "What is a villa?" The correct answer, according to Mr. Platt, is that a "villa" comprehends not only the actual house, but the entourage as well. The only essential difference between the drawing-room and the lawn is that the one is roofed over and the other isn't. Of course this is only repeating, in another way, the injunction of the schools to visualize the problem as a whole. But this last expression sounds like the injunction of some moralist like Matthew Arnold, and much less fanciful than the proposition that, since we live on lawns and in gardens—as well as in the drawing-room—it is fun to think of them as parts of a large dwelling.

So Gilchrist goes to the site, often provided with a small drawing-board, and proceeds to develop his preliminary sketches on the spot. In this work he leans consciously and heavily on his topographical survey: our eyes can so easily deceive us. Once in the drafting-room these sketches are developed by Gilchrist himself—at least during the earlier stages of their study—and in due time the problem of the actual design of the house and other buildings is attacked, but never until he has developed his landscape scheme. Just as he does not use models in studying his work, so neither does he make much use of perspective, unless it be one-point perspective. He thinks always in terms of elevation when he gives consideration to the



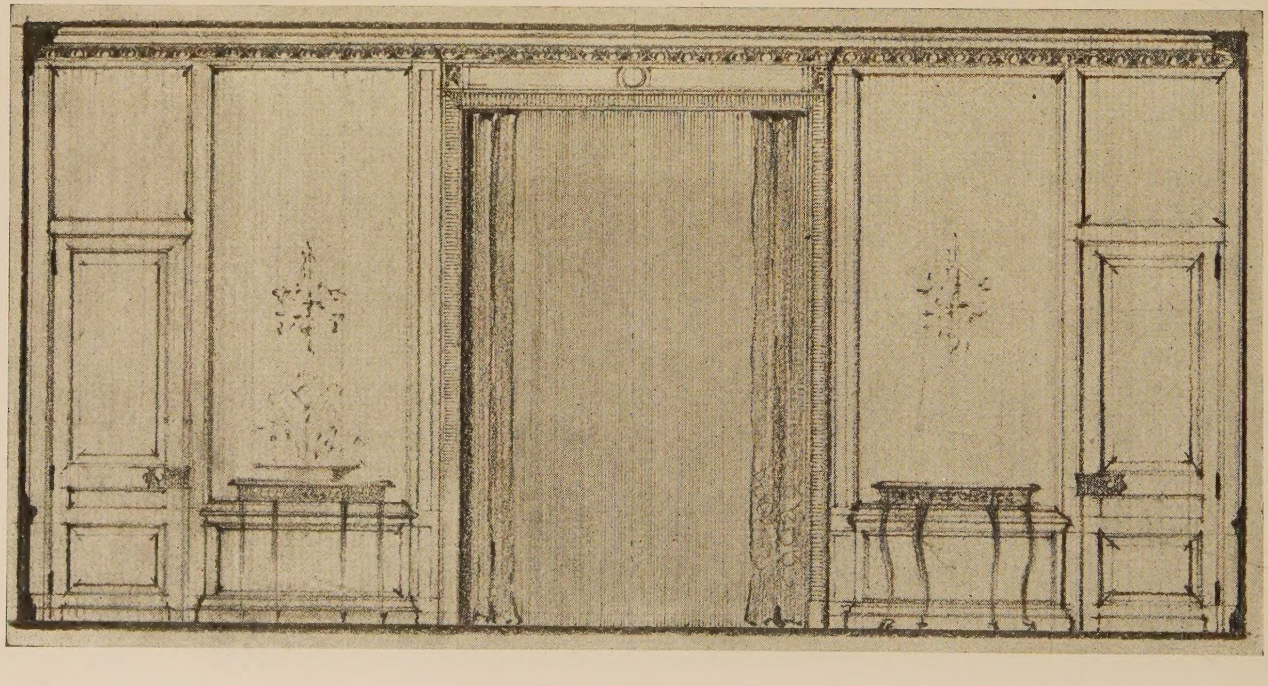
Typical preliminary sketches of Mr. Gilchrist's, reproduced at the size of the originals. The sketches are in black and colored pencil on tracing paper, floated on a mount and fixed design of his houses, and he does not, in the earlier stages of study, concern himself with the interior treatment. Of course this emphasis on elevation would appear to be a bit one-sided, and contrary to the academic injunction to give plan, elevation, and section simultaneous consideration. The thing which saves Gilchrist—as it is that which saves all who are worthy of being saved—is the security provided by those formulæ which, after years of experience, come to form a sort of raft on which we float on an ocean of vacuity. Such formulæ, subscribed to either consciously or subconsciously, are indications of growth in one's thinking process—and they may indicate stoppage of growth. Yet that is the story which sums up the mortality of all æsthetic achievement.

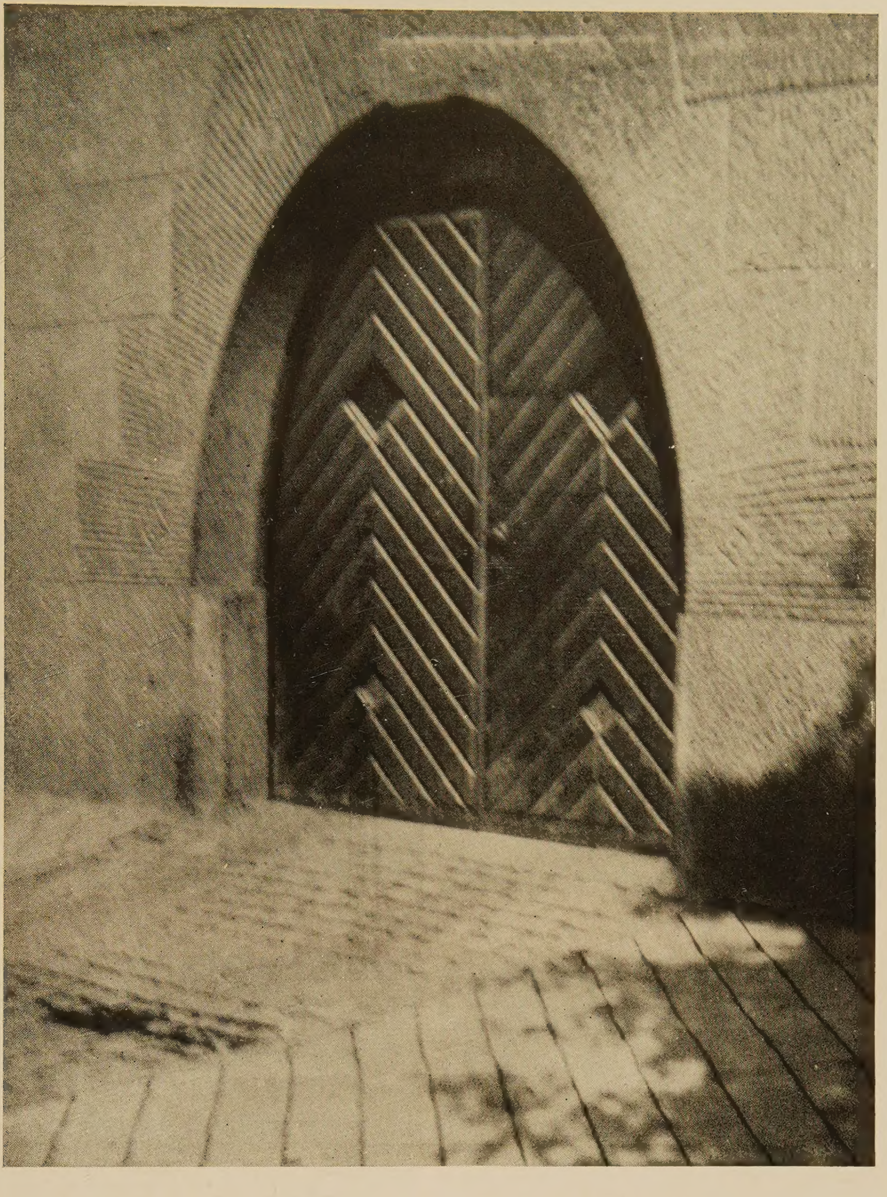
Let this mournful note lead us back, by way of contrast, to the happy interest which Gilchrist shows, after his meticulous manner, in all his work. For no detail is too slight to evoke his enthusiasm. And his devotion to the muse of architecture is constant, unless we make exception of those interludes during which his viola and the shade of Brahms make their irresistible appeal.



Study for a dining-room; original, 12½ *inches long*

Another characteristic interior study in elevation; original, 10½ *inches long*



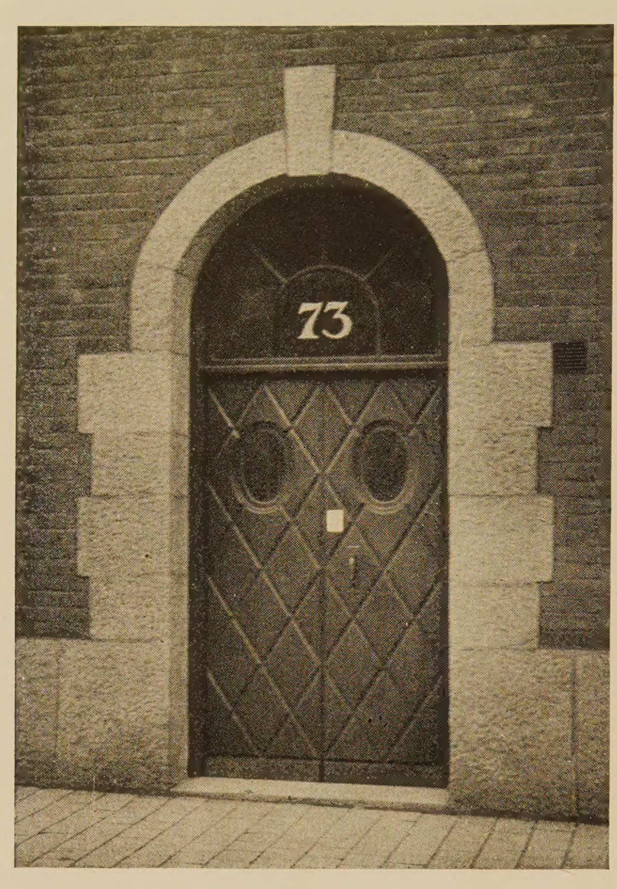


Stockholm Doorways

PHOTOGRAPHIC NOTES ON A RECENT VISIT BY FRANCIS KEALLY

THERE are many points of interest in the following collection of photographs snapped by Francis Keally, an architect of New York, while strolling through the residential streets of Stockholm. One of the outstanding characteristics is the use of stone in its real nature—heavy, course blocks, without the slightest suggestion that these might be anything other than stone. Occasionally the architect will mold it slightly, but for the most part it is in rather heavy units, depending for their effect in the design upon face-tooling or the size and shape of the stone itself.

The doors themselves are all of wood, but showing an interesting variety of panelling or use of the V-joint as compared with our own rather close adherence to traditional panelling.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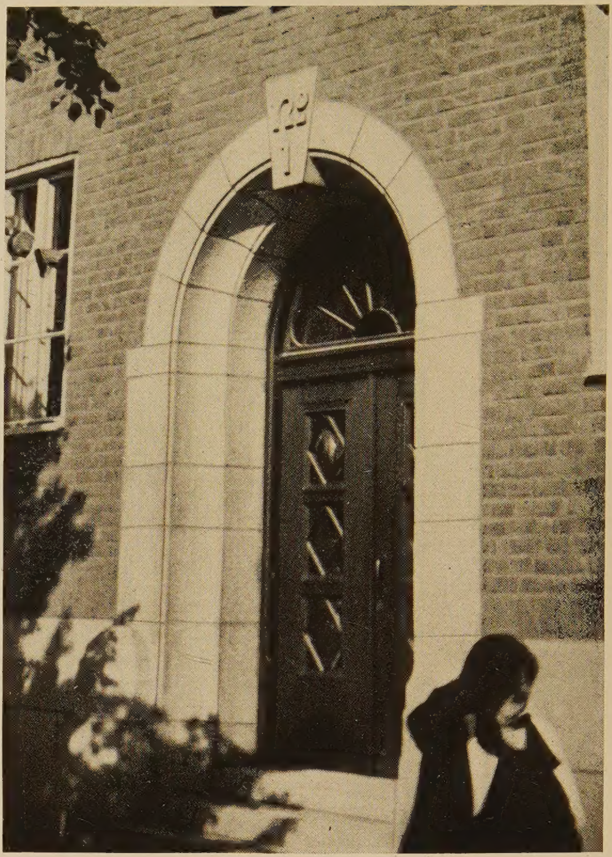
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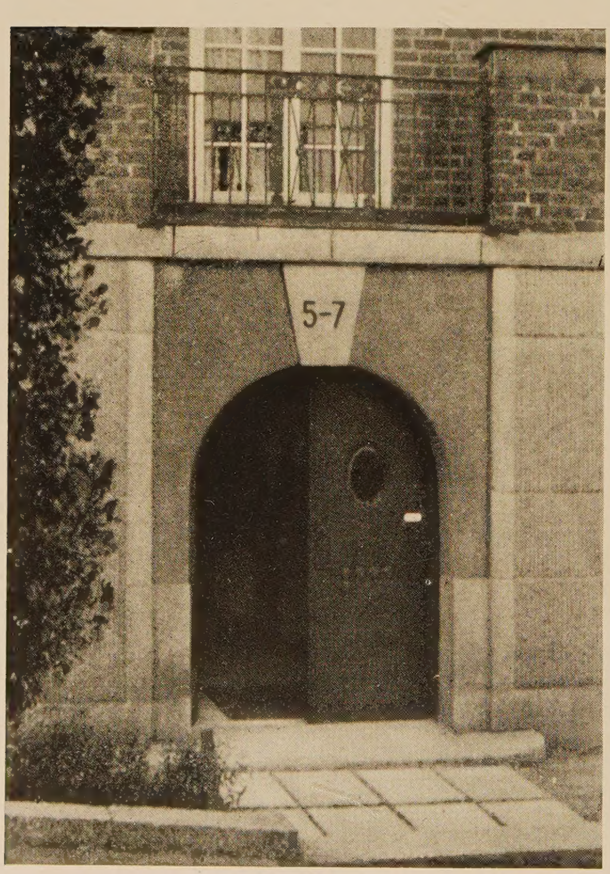
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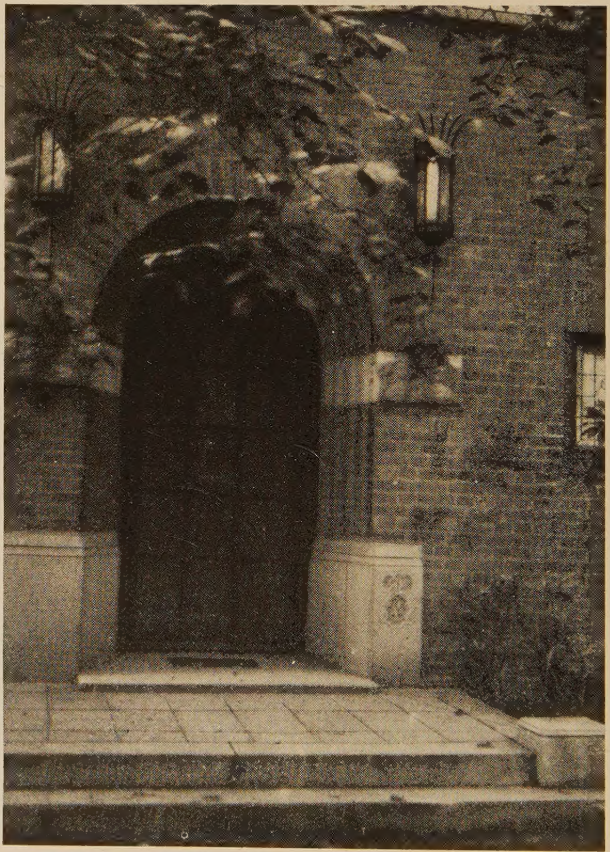

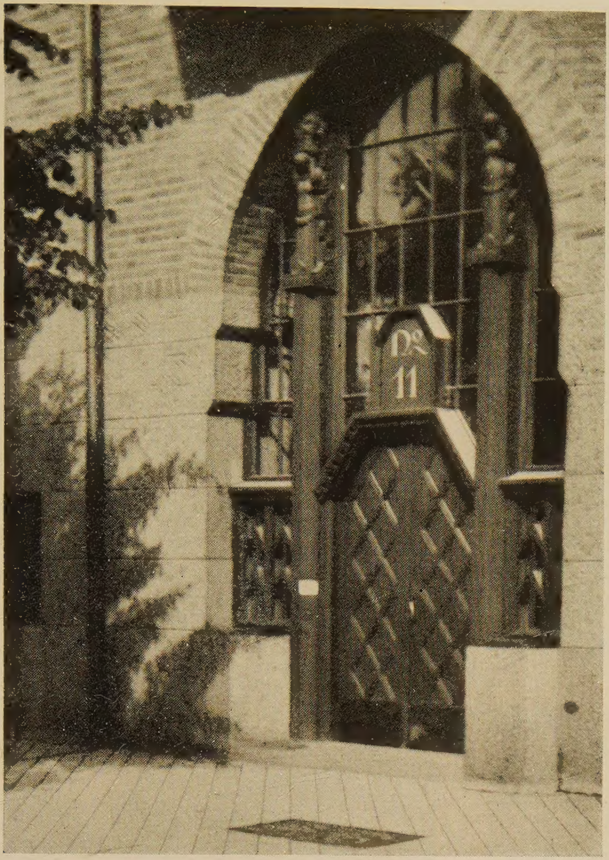
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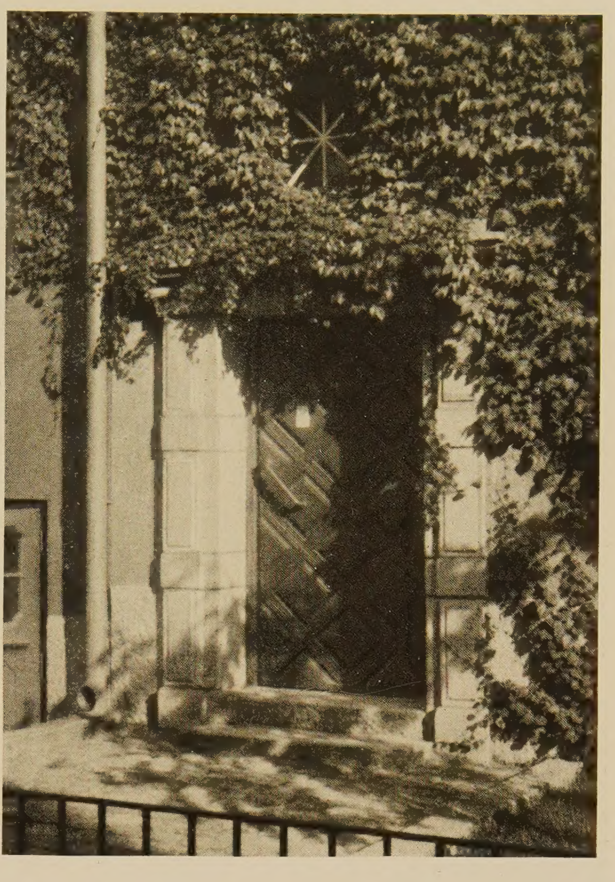
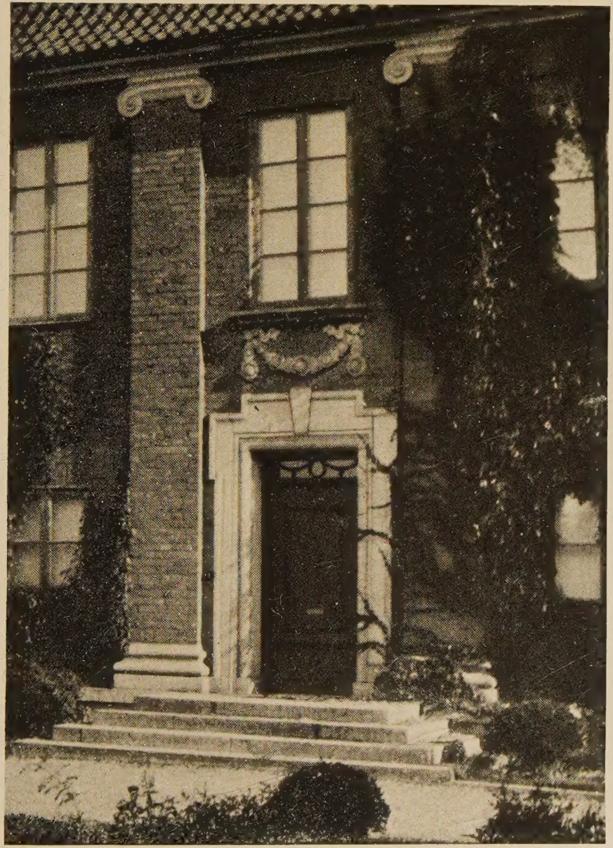
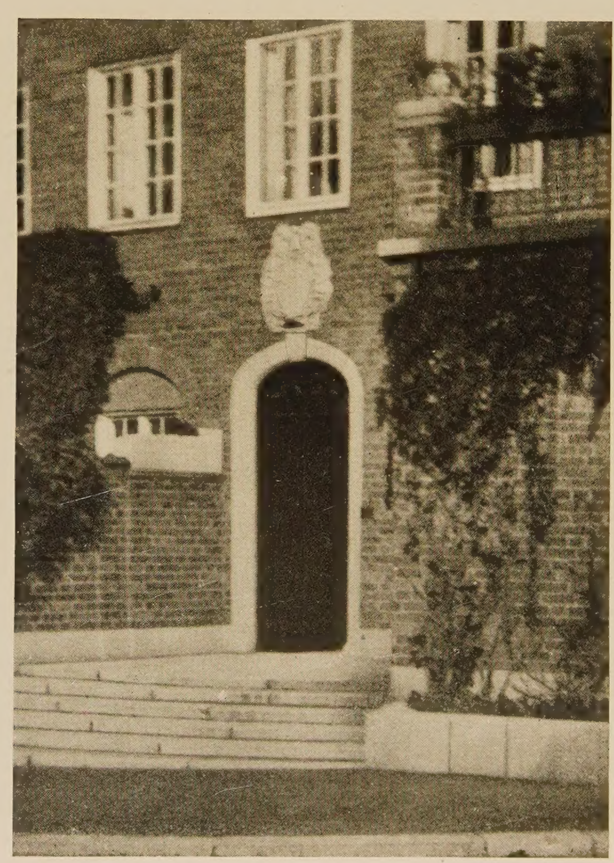
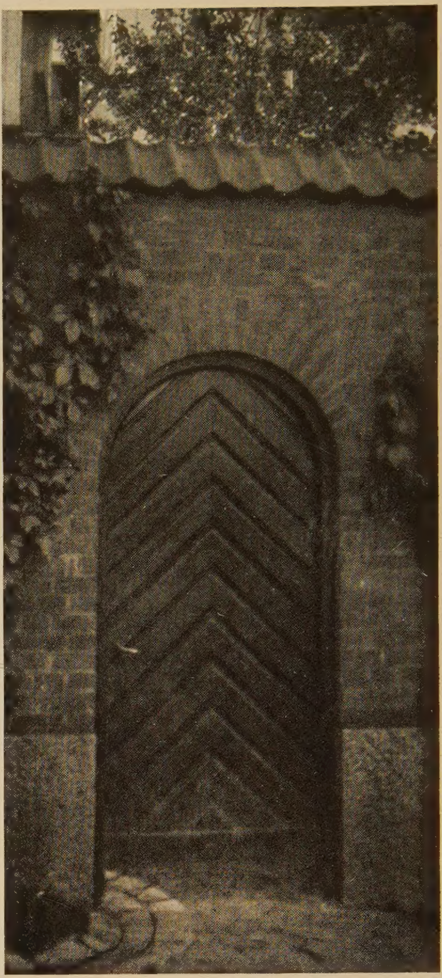
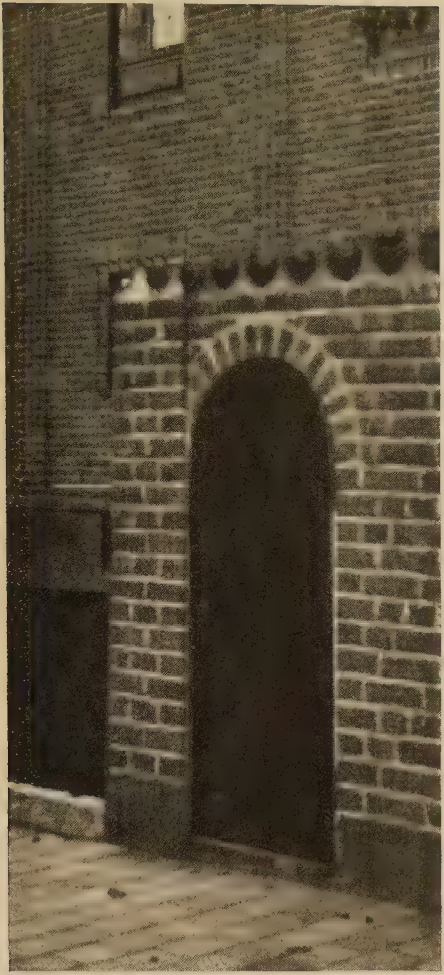




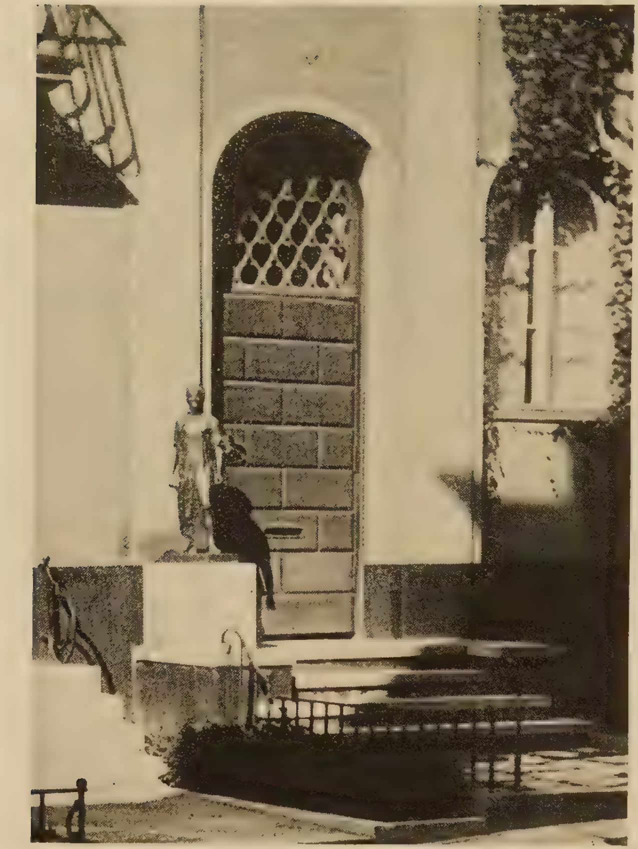


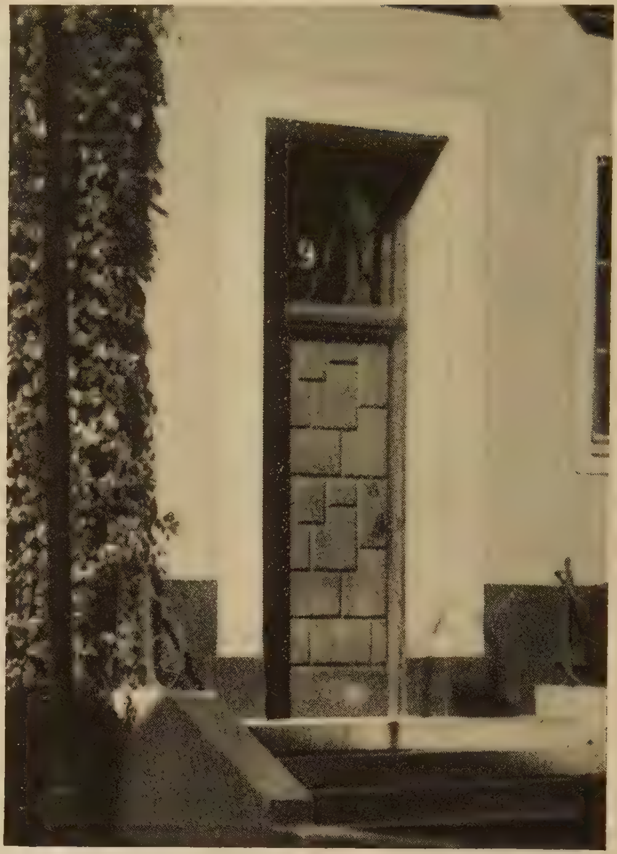


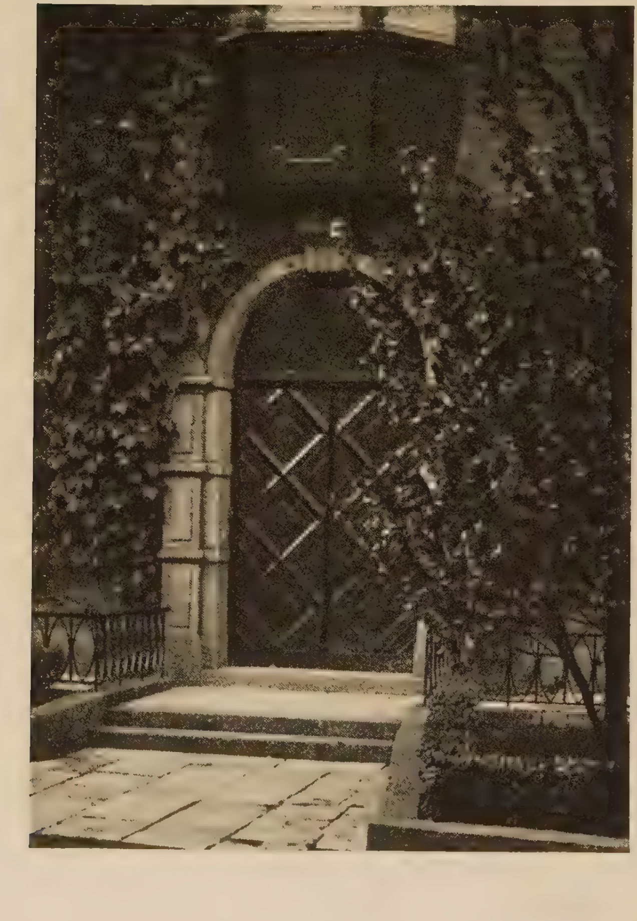
The illustration above and the one adjoining it on the next page show garden-wall entrances such as are rather common in Stockholm. The

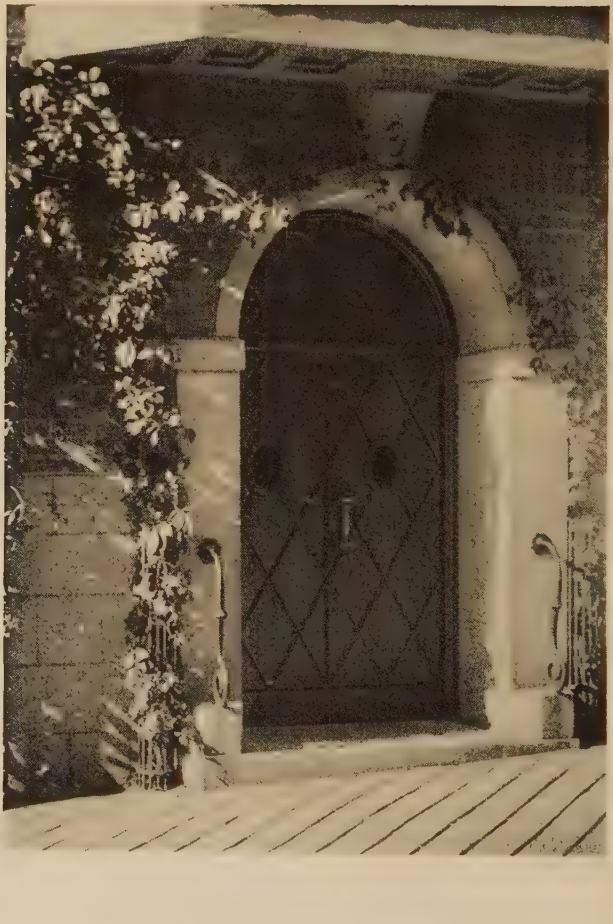


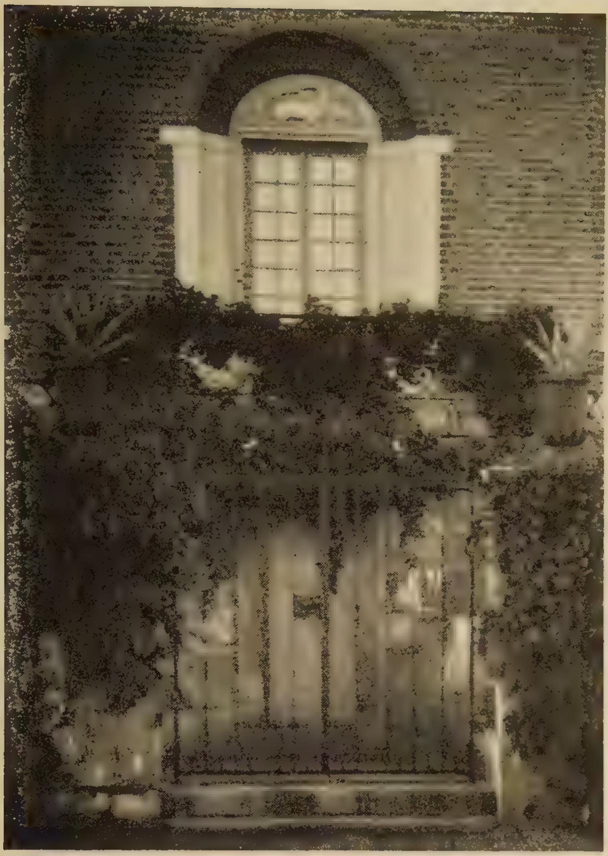
naïveté with which the rowlock arch in the illustration above dies into the pilaster at the end of the wall is a curious detail

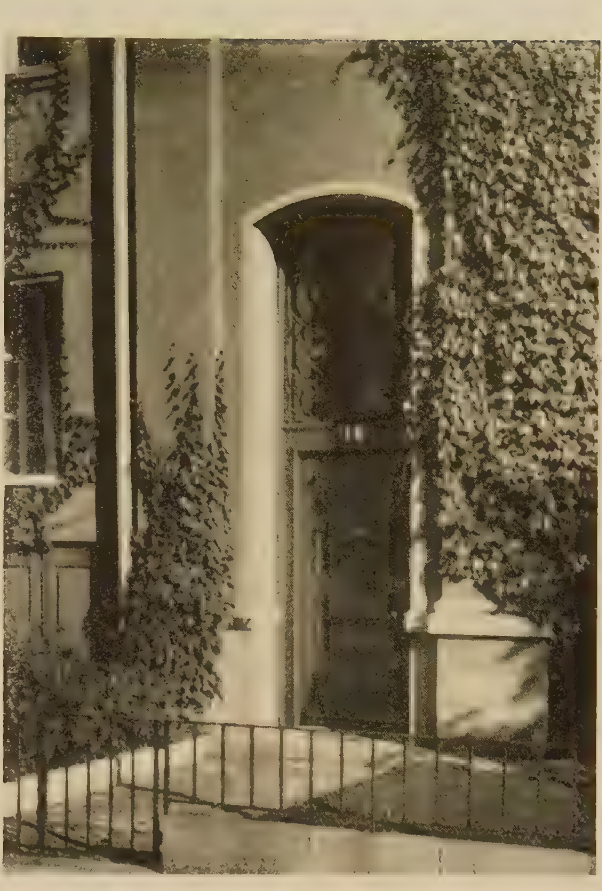


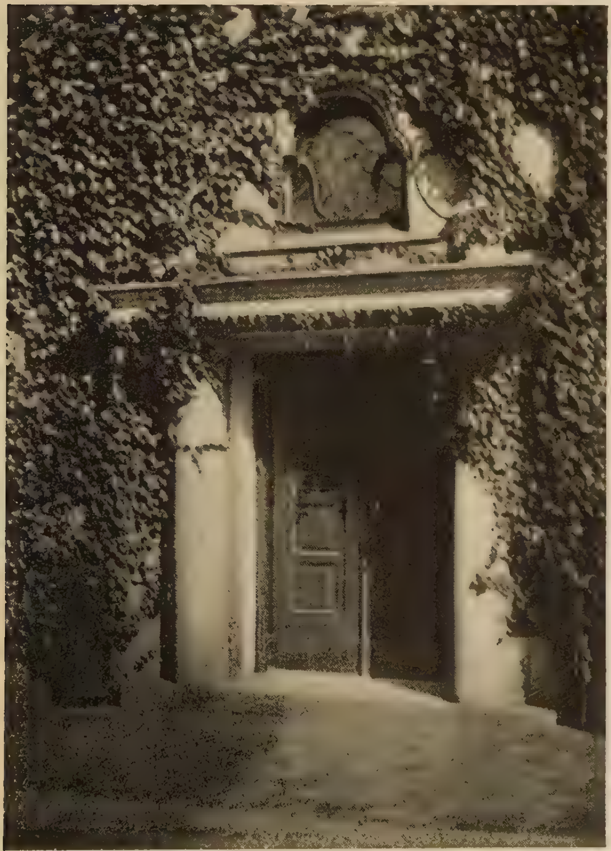


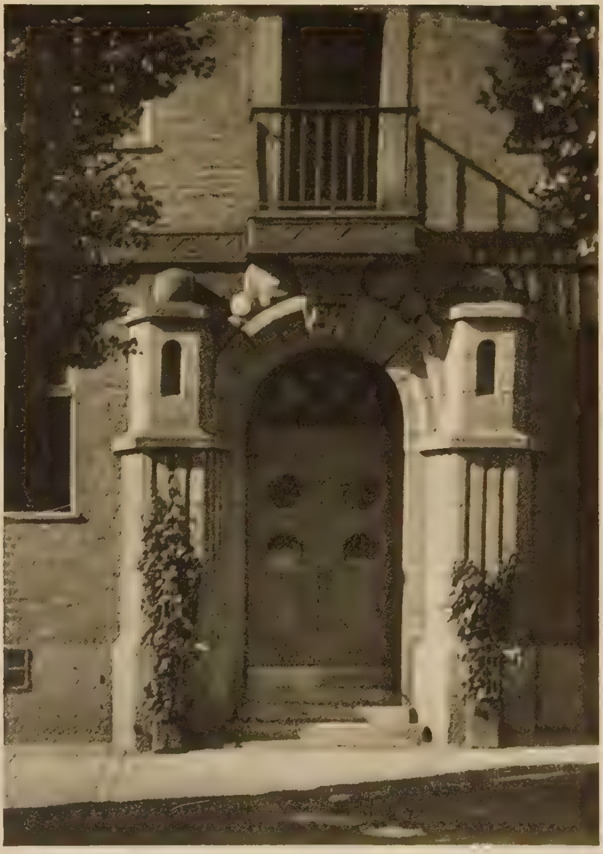


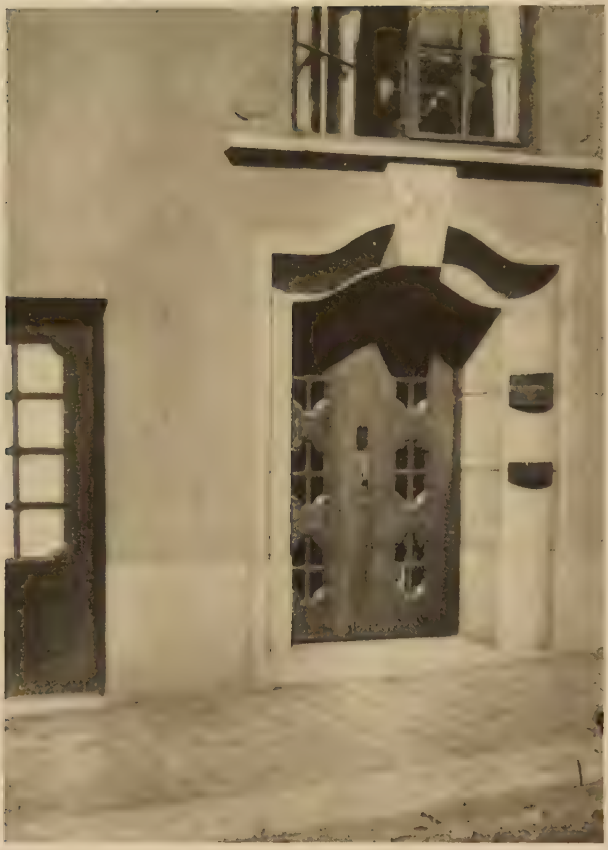


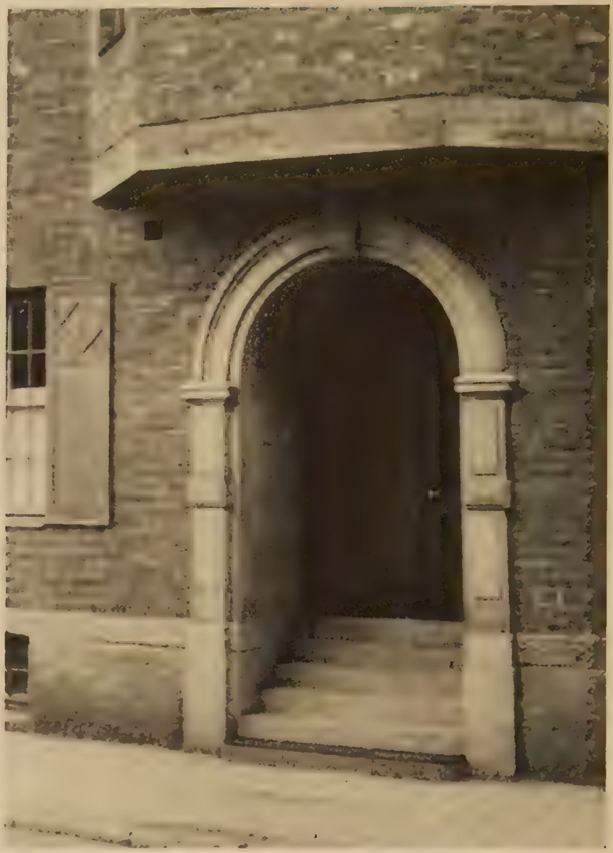


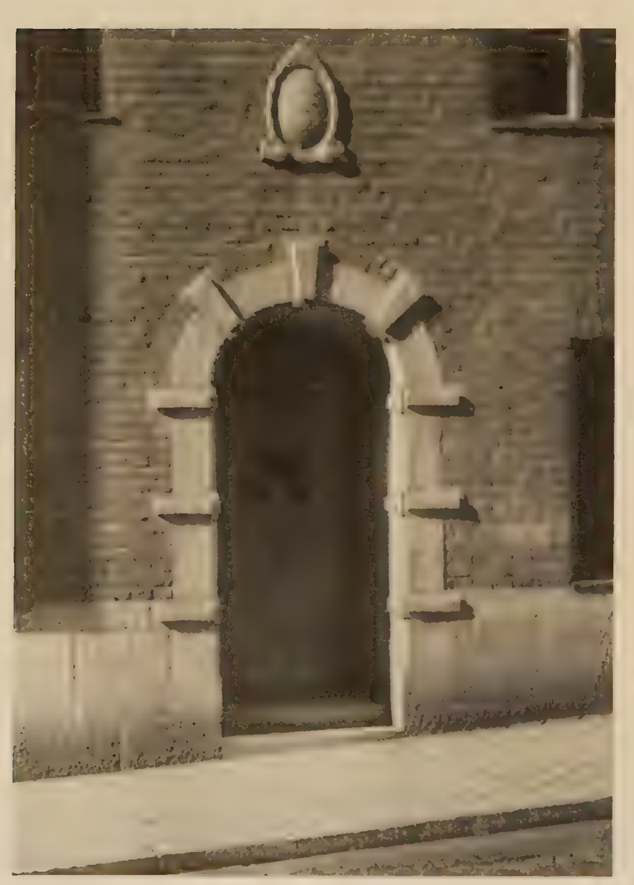








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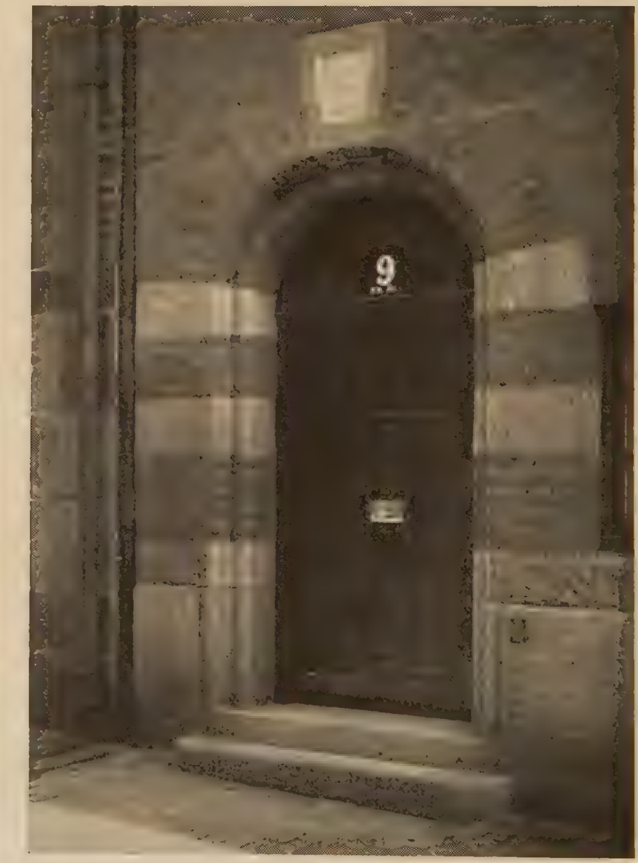
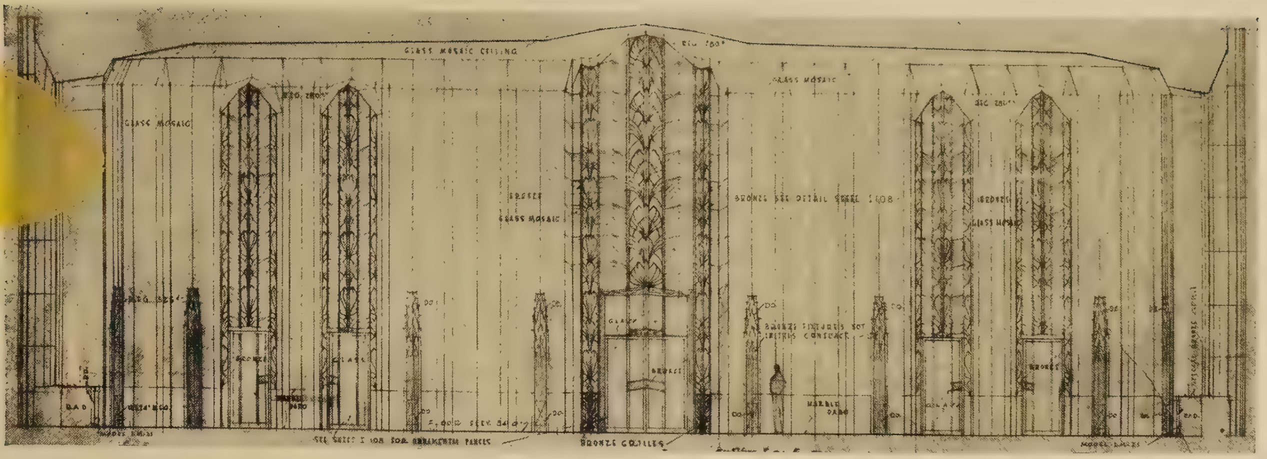




The reception-room of the Irving Trust Company, New York, in which the wall and ceiling surfaces are broken by many angular changes of plane, all covered, above a marble dado, with glass mosaic. Voorhees, Gmelin & Walker, architects

Glass Mosaic

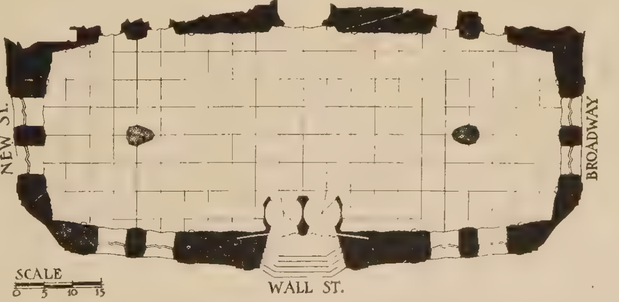
By Eugene Clute

COLOR, vibrant red shot through with gold, varied planes in gleaming mosaic, slightly undulating wall surfaces that suggest a rich, free-hanging fabric; great tall traceries of bronze set in mosaic; glimpses of Trinity Church seen through the windows—these are some of the things that combine to make the great reception-room of the bank in the Irving Trust Company Building, 1 Wall Street, of compelling interest. In its treatment the architects, Voorhees, Gmelin & Walker, have shown a keen appreciation of the subtleties and refinements of which modern design is capable and have used glass mosaic in a manner which reveals new possibilities. Heretofore, mosaic has been used as a more or less incidental decorative element, but in this room it is the chosen medium of expression.

The bank authorities expressed to the architects their desire that this reception-room be made inviting and friendly, rather than austerely monumental or over-impressive. Stone seemed too monumental, wood not sufficiently monumental, painted decoration in a purely ornamental design not sufficiently important, and figure subjects undesirable. Story-telling pictorial decorations and symbols have been avoided throughout the building; there are no historic or allegorical subjects. There are no beehives and no scales of Justice. With the more usual materials eliminated for the reasons mentioned, the architects turned to mosaic, and to glass mosaic in particular, as the most suitable. It has nobility and architectural character; it is an adaptable material and it can be kept clean easily. Most important of all, it affords colors of great depth and vibrancy, and color had been determined upon as the chief means of giving richness and friendliness to this room.

It was recognized from the outset that a room in a modern steel-frame building is only a cage set within the frame of the building and finished with a lining that has no more structural significance than the lining of my lady's work basket. Such a room is not a box with a lid, as the old rooms were. The ceiling may well be regarded as a canopy and the walls as curtains. There is no reason for a marked division between them, and unity is often preferable.

The irregular form of the room also pointed to a non-structural treatment. All of its walls are bowed outward in broken lines—along Wall



Plan of the reception-room, Irving Trust Company, New York

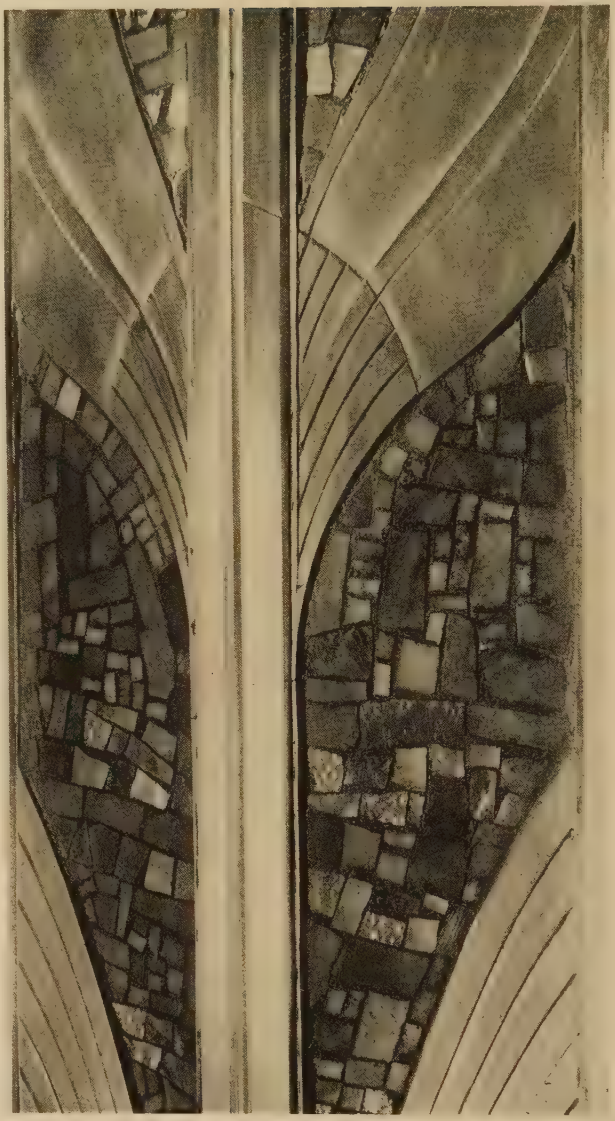
Street and New Street—because that is the form of the property line, and the others to agree. The ceiling, too, is irregular, sloped upward slightly from the ends and bowed up in the centre between two concealed girders. It is bowed also in transverse section. All of these surfaces are in planes at slightly varying angles to each other, as shown on the drawings reproduced here. To such surfaces mosaic is readily adaptable.

The mosaic begins three feet above the floor, at the top of a dado of very dark red marble, *Deerco rouge*, the brecciated figure of which is about the size of the tesseræ in the lower part of the mosaic. It grades imperceptibly from a dark red very like that of the dado up to a lively orange upon the ceiling. The tesseræ show color variation; near the bottom they are in Chinese vermilion, ox-blood, carnelian, and various related hues that blend to produce a deep, vibrant red, while those upon the upper wall and the ceiling are in lighter shades. The gradation from bottom to top is so managed that it appears more like an effect of lighting than of color.

Throughout this red ground is an intricate pattern of abstract lines in gold, a web-like pattern that is wide-spaced at the dado and grows closer and richer in gold the higher it goes. The tesseræ in the design are red-gold, pale silver-toned gold, and green-gold. Some have a surface of satinlike smoothness, while others are irregularly rough. All of the tesseræ, both in the background and in the pattern, are of irregular, broken shapes and varying sizes. The mortar which shows between them is of a rich dark-blue color upon the walls, and black upon the ceiling.

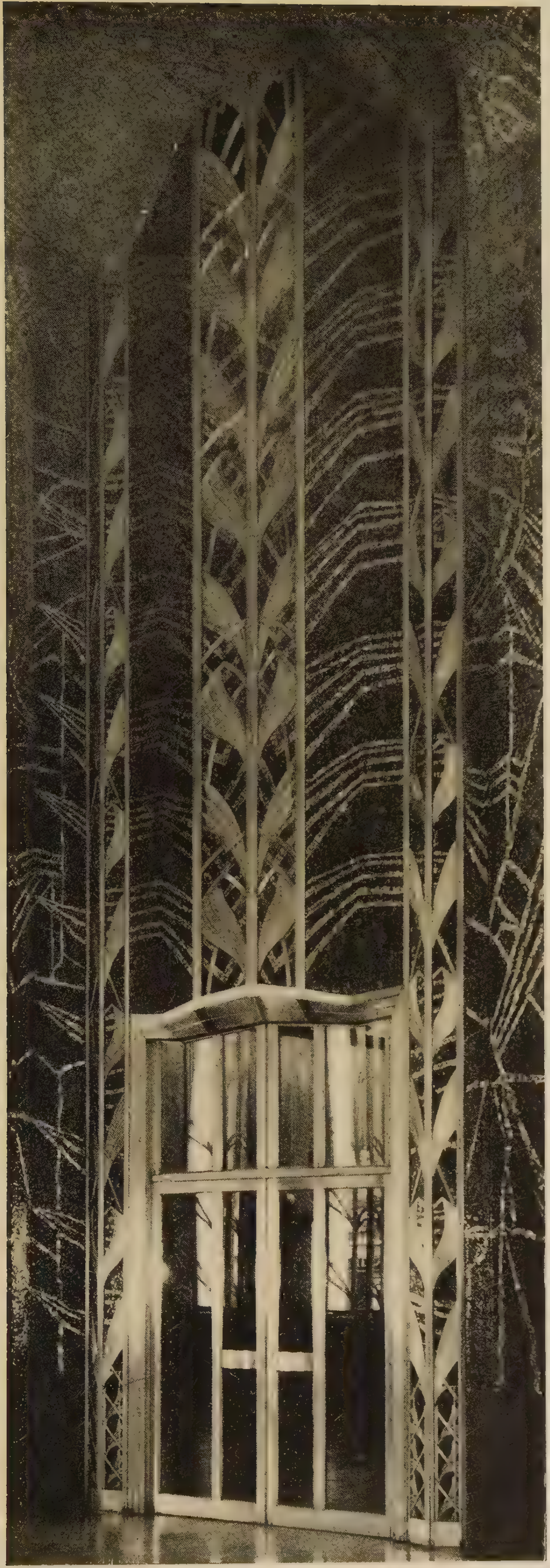
In the gold tesseræ, gold leaf is incorporated between a thin outer surface of transparent glass and a backing of heavier glass, the whole being consolidated under pressure while the glass is in a partly molten state. This effectively protects the gold. Different shades are produced by using gold alloyed with silver, copper, or other metals as well as the eighteen-karat gold. Further variety in color is obtained by using delicately tinted glass for the protective surface. The other tesseræ are of glass of special composition in which the coloring materials are incorporated.

The pattern is an intricate design of abstract lines that seems to have no repeat and hardly a distinguishable recurrent motive, but that gives a satisfying sense of order. The lines are those characteristic of the ornamental detail found elsewhere throughout the building. It is a well-composed design, rhythmic and expressive of the spirit desired in this room, and its ascending movement agrees with the upward color gradation of the background. It was developed by the architects' staff.



A close-up detail of bronze tracery and glass mosaic from beside the doorway shown on the opposite page. Note the variation in size, texture, color, and direction in the glass tesseræ. In the facing picture the lighter weblike lines are gold, against a background graded from red below to orange above

How this pattern was worked out is shown by the drawings reproduced here. It has a repeat, a huge one, that extends from the dado to the centre of the ceiling and repeats longitudinally upon the larger surfaces; there is also a smaller unit which repeats upon the piers between the windows and in the reveals. In repeating it is turned over to right or left, so that the lines join.



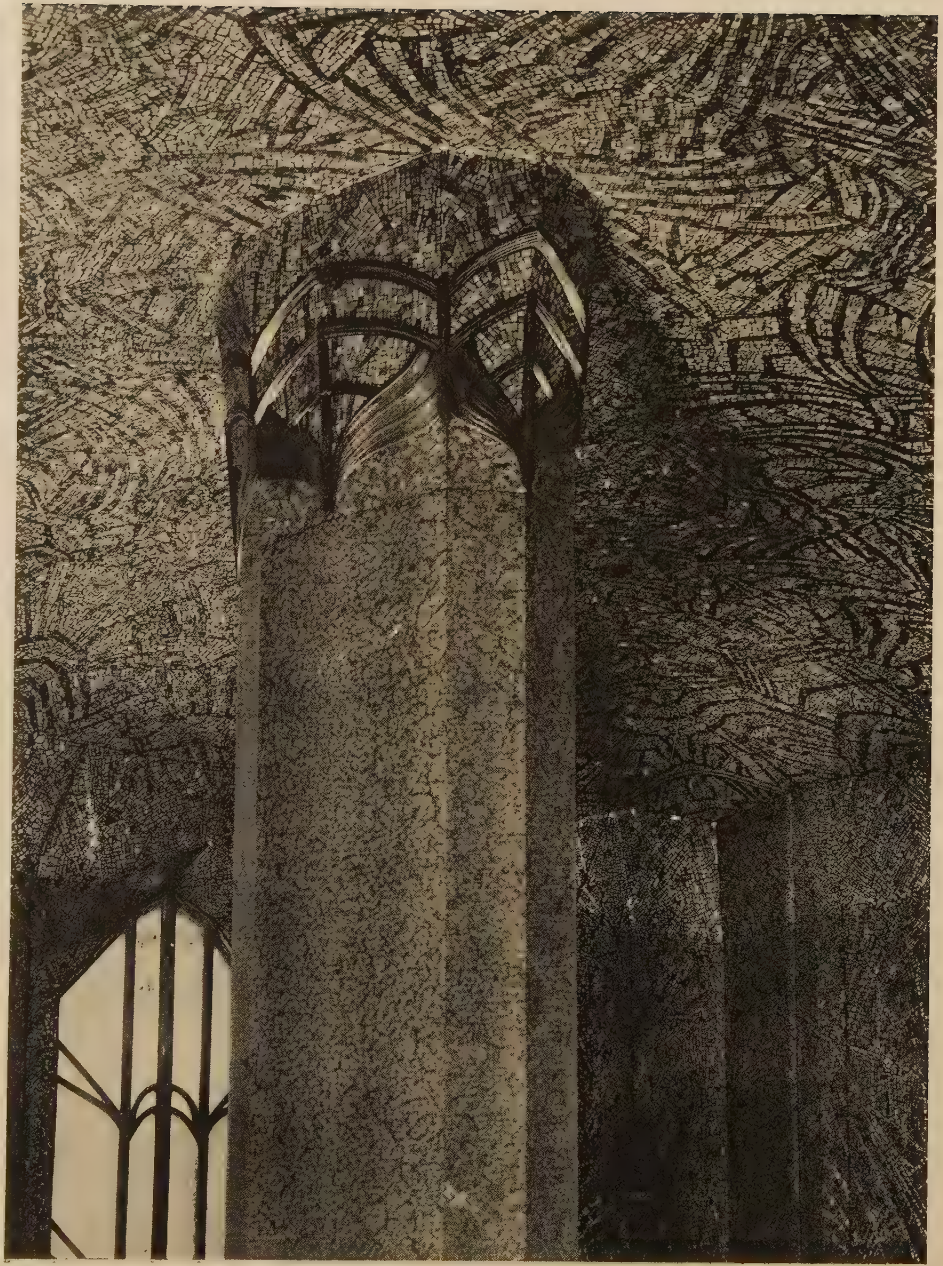
The problem presented by the irregular surfaces throughout this room was solved by subdividing them upon the elevations and ceiling plan, then developing the areas by calculation so that a true elevation of each was shown. The various divisions were numbered and the angles were marked with letters for identification. Upon these developed drawings, at three-quarter-inch scale, the pattern was drawn in.

During the development of the design Hildreth Meière acted as consultant for color and the scale of the decoration. Miss Meière hung up in her studio a color scale representing the gradations from the darkest red at the dado to the orange of the ceiling and painted in upon the drawings of the motives the coloring in the same upward gradation. A portion of the large motive was enlarged photographically and graded color was applied to it. She also made various other color studies upon drawings and models.

When all of the necessary drawings were completed, Ravenna Mosaics, Inc., who executed the mosaic work, sent them to their studio in Berlin, where the tesseræ were produced. Ralph T. Walker, of the firm of Voorhees, Gmelin & Walker, and Perry Coke Smith of their office visited the European studio to see the work started and in due time the tesseræ arrived in this country.

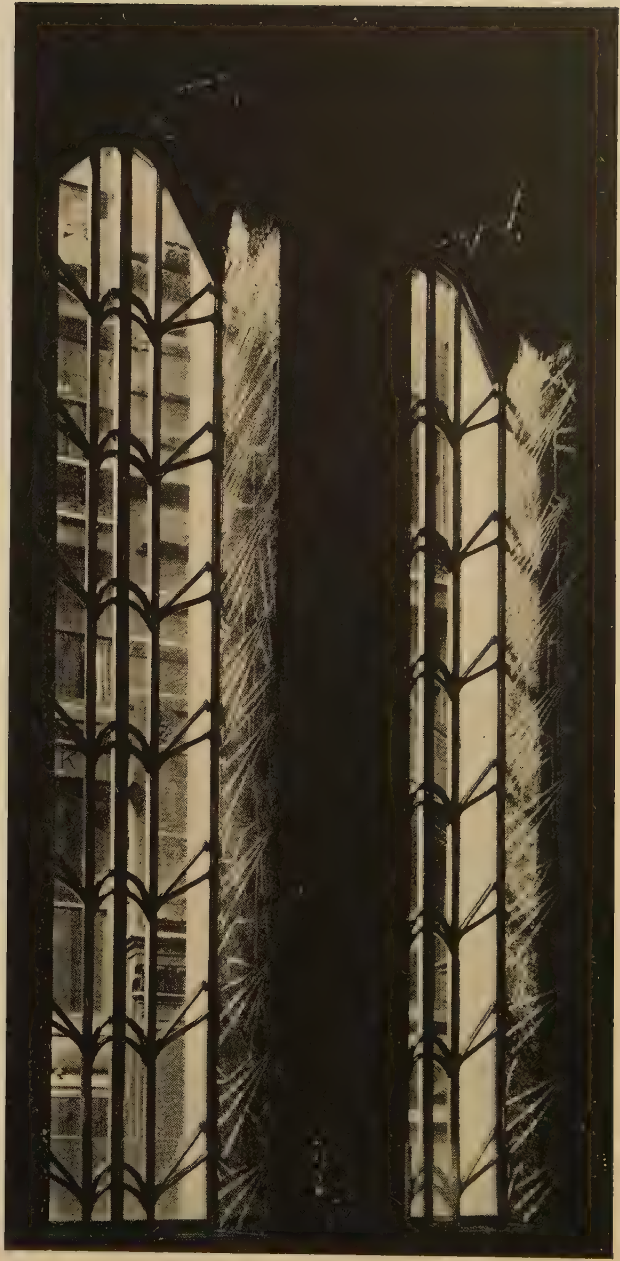
Here they were affixed to full-size working drawings and the mosaic was applied after the usual manner, the tesseræ for each section being pasted upon paper, which held them in place while they were pressed into a bed of cement mortar. After the mortar had sufficiently set, the paper was moistened and removed.

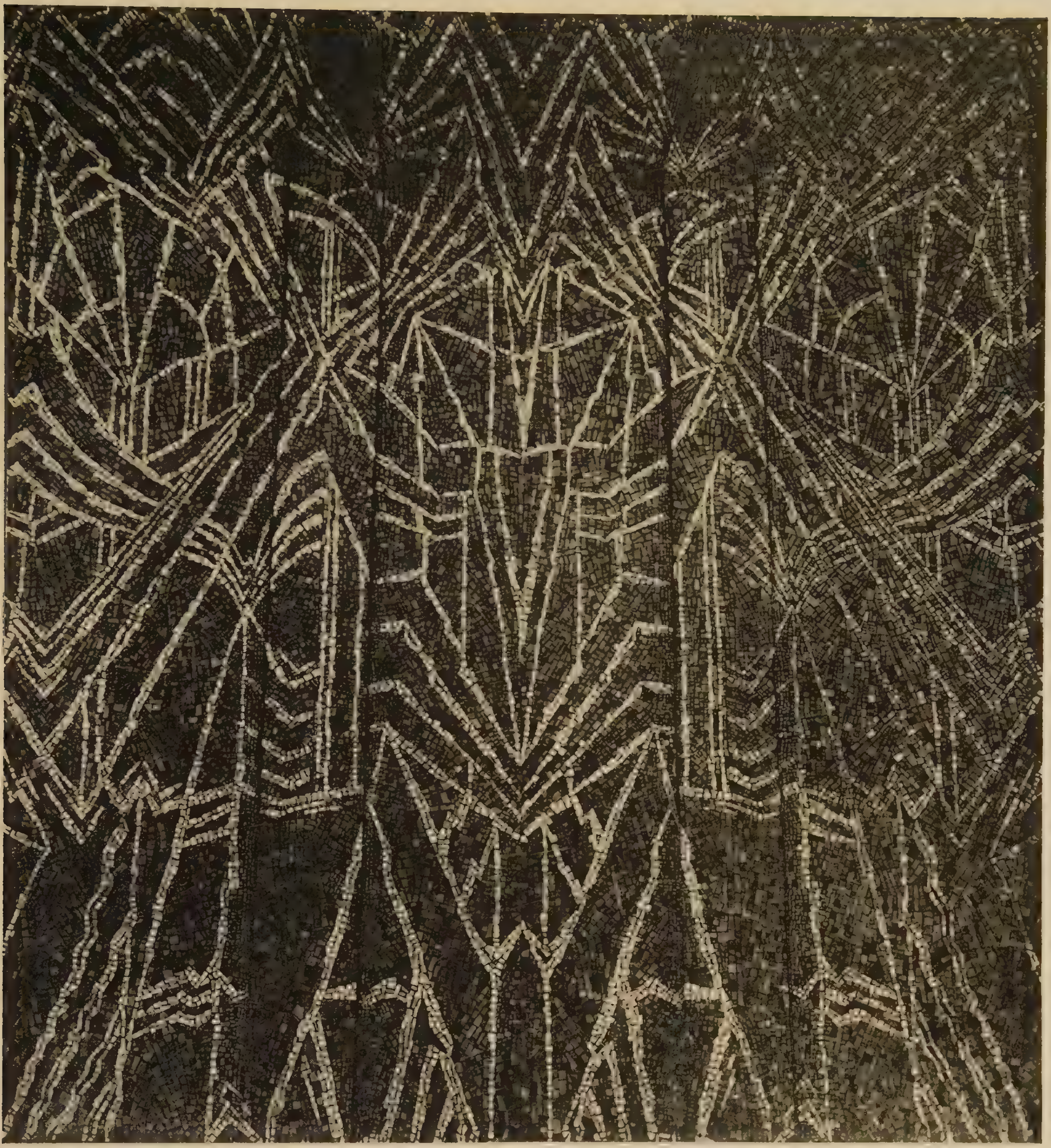
The selection and arrangement of the tesseræ upon the paper calls for artistic craftsmanship, since the workers have to select and arrange the tesseræ for color, size, texture, shape, and direction. Much is left to their expert judgment and artistic sense in carrying out the work. An examination of the close-up photograph herewith will give some idea of the variety shown by the tesseræ in an area a few feet square. It will be noted that those in the background are arranged in lines running in various directions in different parts and at various angles to the lines of the pattern and of the tesseræ in adjoining areas of the background, all carefully studied to produce the desired effect. Many of the smaller tesseræ are produced by breaking material of twice the usual thickness. These are set with the irregular surface of the fracture showing



At left, a detail of one of the two piers. These are faced with red Verona marble, the caps repeating the glass mosaic of walls and ceiling, and being made more of a focal point with the bronze tracery

Note that the gold-webbed mosaic continues into the window reveals as far as the bronze tracery supporting the clear plate glass



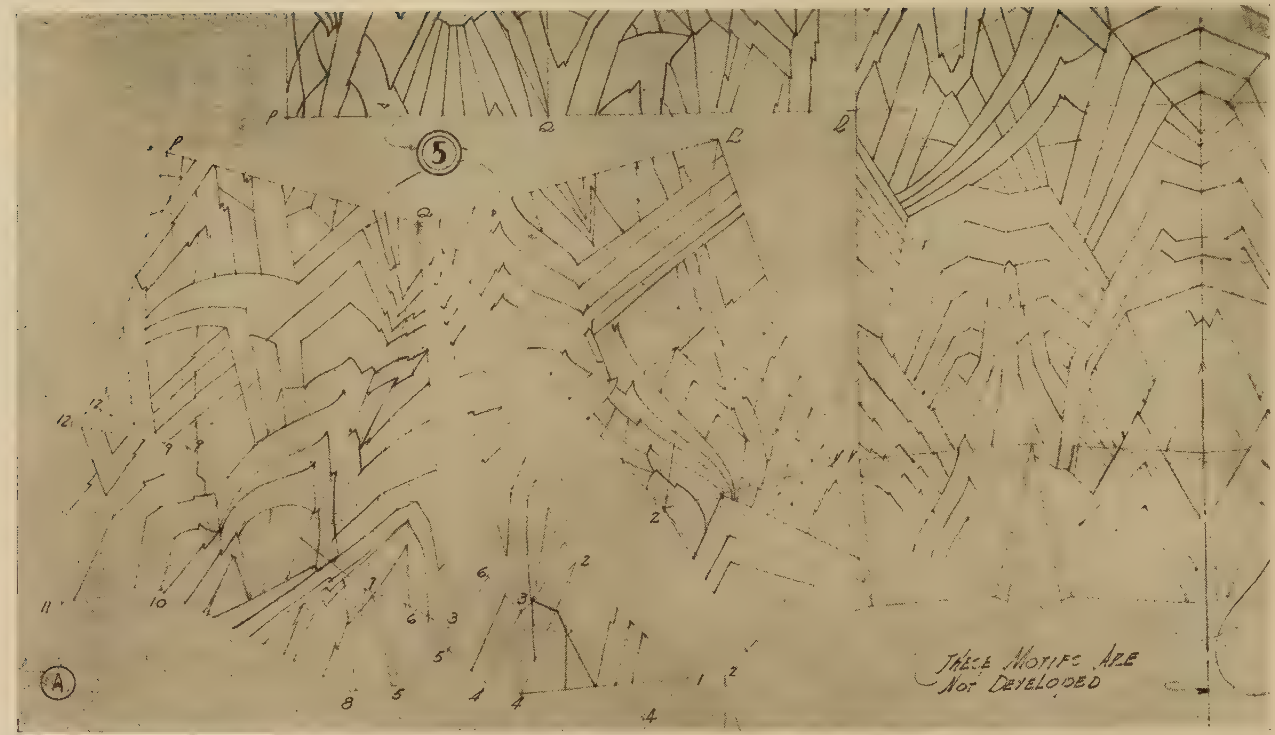


A detail photograph of the mosaic wall at the junction with the ceiling. The abstract pattern of gold lines becomes smaller and more complex as it rises. Note the repeat and reverse of the pattern. Craftsmanship by Ravenna Mosaics, Inc.

upon the face of the work. There are countless matters in which reliance must be placed upon the skill of the highly trained workers, directed by an especially able craftsman, in order that harmony and the effect desired may be secured in the work as a whole.

The installation of the work also required skill. The only architects' drawings required were the three-quarter-inch scale details and the three-inch details of the few motives. Full-sizes of all parts of the work were not needed and the cartoons at three-inch scale, also full-sizes of the motives, were made on photographic enlargements of the architects' scale details.

One of the most interesting features of this interior is the use of bronze tracery and mo-



The task of developing the intricately facetted surface into its plane components was no slight one. Here is a portion of the architects' three-quarter-inch scale detail of the ceiling

saic in combination. Over the doorways and at other points upon the walls are shallow recesses decorated with vertical moulded strips of extruded bronze to which are brazed branching ornamental motives of cast bronze. This bronze work is set in the walls with only slight projection beyond the face of the mosaic, which is fitted into the voids of the bronze design.

A similar method of decoration has been employed at the top of the two piers. Here, however, the marble is carried into the lower part of the capital while the mosaic fills the spaces in the upper part, effecting the transition from the marble of the pier to the mosaic of the ceiling.

These piers are interesting. If they had been made round or square they would have acted as centres, tending to divide the room into three parts; consequently they were given a streamline form, as shown on the plan. Cased in red Verona marble, they are of a light red color that tones in with the ceiling and that detaches them sufficiently from the walls. Marble has been used here as a facing rather than mosaic, to secure true, sharp, vertical lines and smooth hard surfaces suggestive of their structural function.

The floor of the room is very dark red marble mosaic, *Deerco rouge*, like the dado, with the slight color variation characteristic of this marble. The cement mortar between the tesseræ is dark red, making a floor that is practically solid in color. It is divided into four-foot squares by bronze dividing strips with a quarter-inch face.

The windows have frames and traceries of bronze, and are glazed with clear plate glass so that the rich red coloring of the interior may be seen from the outside in contrast with the buff color of the Indiana limestone walls, and that the views seen from within may serve to decorate the windows.

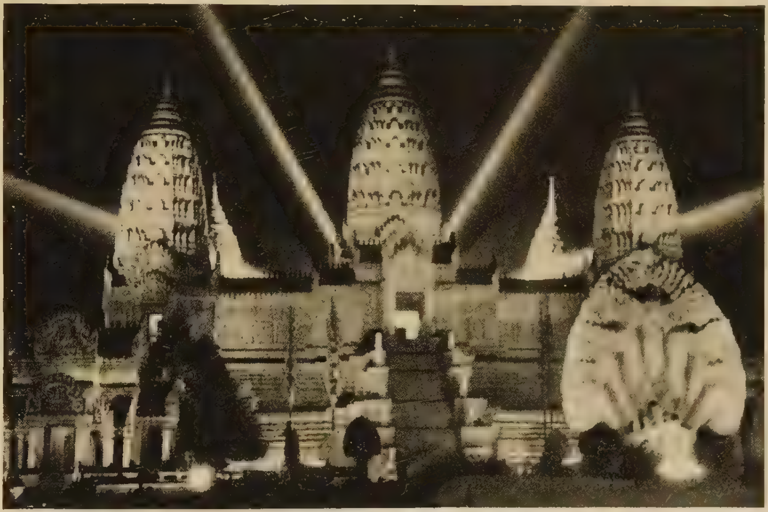
Recessed in the walls at intervals are tall, narrow features of ornamental bronze in which are combined equipment for heating, ventilating, and lighting (described in the August issue).

The nature of this reception-room will be understood in view of the unusual arrangement of this bank, which is vertical instead of horizontal. This is not a banking-room, there are no counters or cages, and the messengers from brokerage houses and other business houses do not come here; provision for taking care of them is made on the floor below with a direct entrance from New Street. It is the room to which customers come to consult with officers of the bank and through which they pass on their way to the banking-room above.

High-lights of the Paris Exposition, 1931

Through the middle of the exposition plan a lake of irregular form gave opportunity for varied fountains, all of them electrically lighted

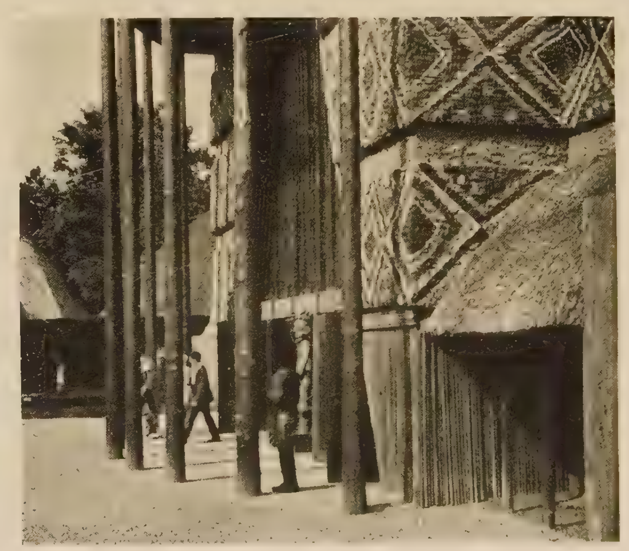
A typical street scene in the exposition. Here the lighting was effected by tubular lights in three colors extending in recesses up the white columns



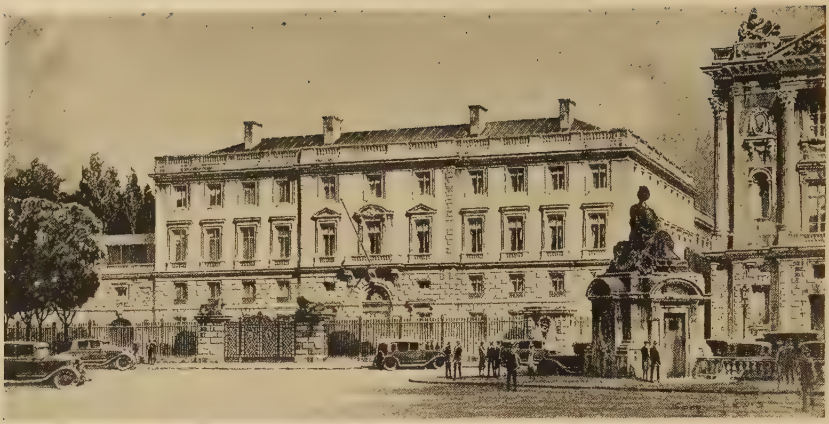
The reproduction of Angkor Vat in its night lighting—unquestionably the most striking single feature of the exposition

One of the buildings representing Cameroun and Togo — African territories under French mandate—which buildings drew back again and again the architectural observer

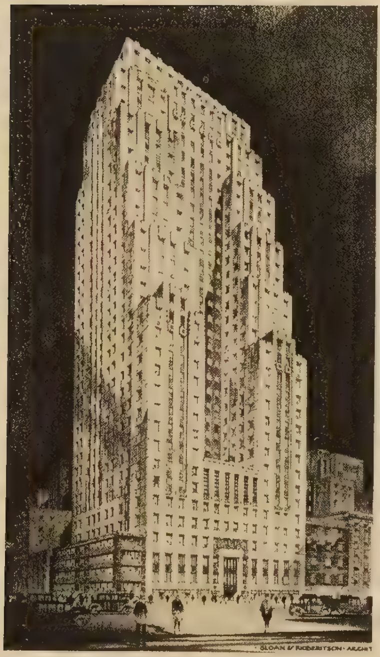
A detail of the building shown at left. An extremely rough stucco has been used by Boileau & Carrière, the architects, colored chiefly in black and light gray. The base is of bamboo strips



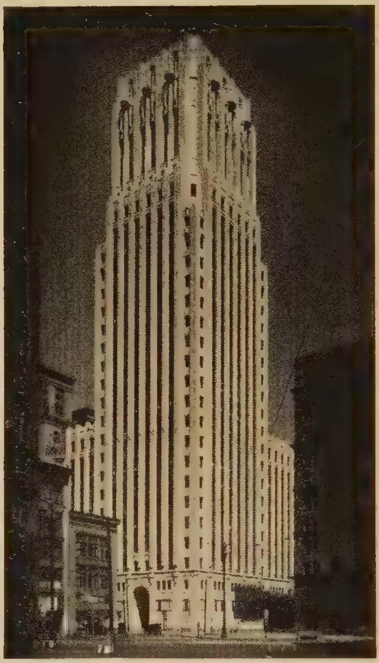
Architectural News in Photographs



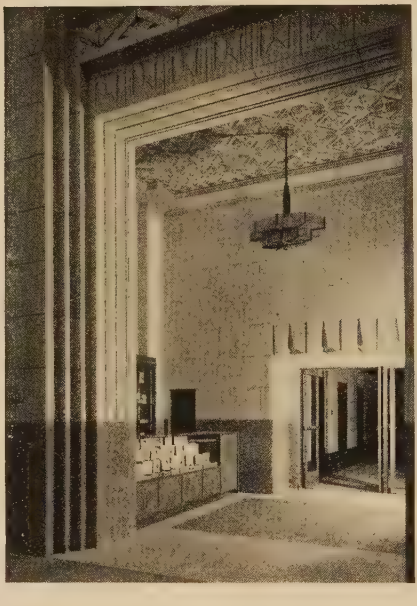
The American Government Embassy, now under construction on the Place de la Concorde, Paris, on the site formerly occupied by the headquarters of the Union Artistique. Delano & Aldrich, architects



The Maritime Exchange Building, recently opened at 80 Broad Street, New York. Sloan & Robertson, architects

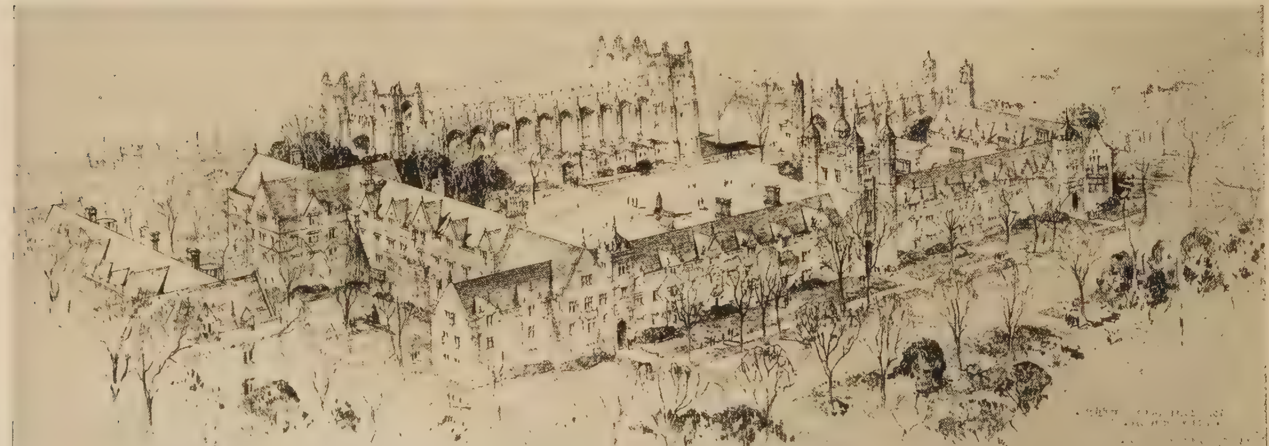


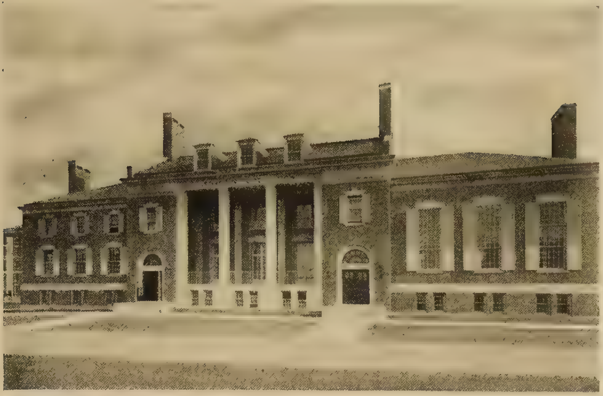
The recently completed Shell Oil Building in San Francisco. George W. Kelham, architect



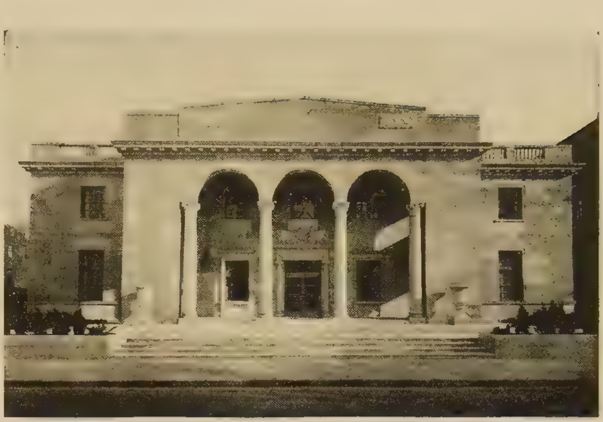
The open-air entrance lobby of the Title Guarantee and Trust Company Building, Los Angeles. John and Donald B. Parkinson, architects

The Cook group of buildings for the University of Michigan, Ann Arbor, two units of which are now built. York & Sawyer, architects

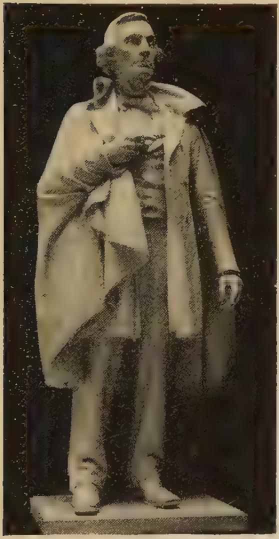




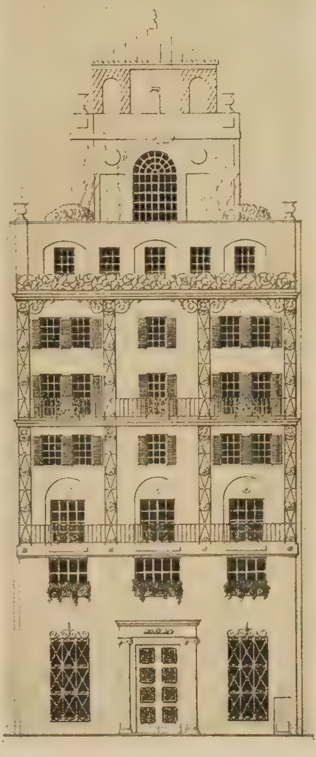
The George W. Todd Union on the new River Campus of the University of Rochester, Rochester, N. Y. Gordon & Kaelber, architects; Charles A. Platt, consulting architect



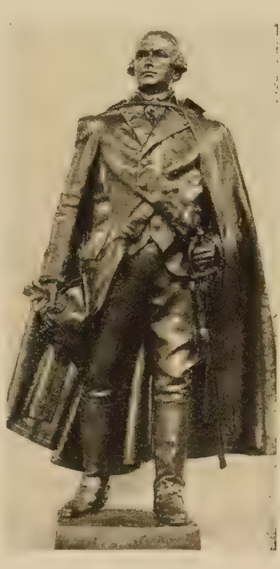
The Angeline Elizabeth Kirby Memorial Health Centre, Wilkes-Barre, Pa. T. H. Atherton, architect; Jane M. Brown, designer; W. C. Shepard, supervisor



Statue of Jefferson Davis, for Statuary Hall, Washington, D. C. Augustus Lukeman, sculptor

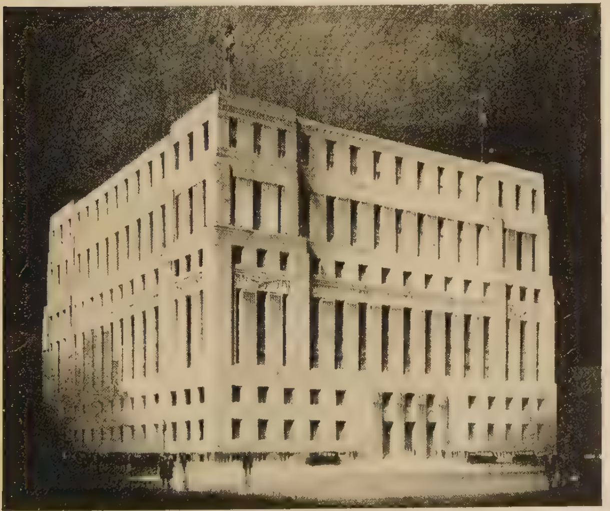


Front elevation of the proposed Cosmopolitan Club, East 66th Street, New York. Thomas Harlan Ellett, architect

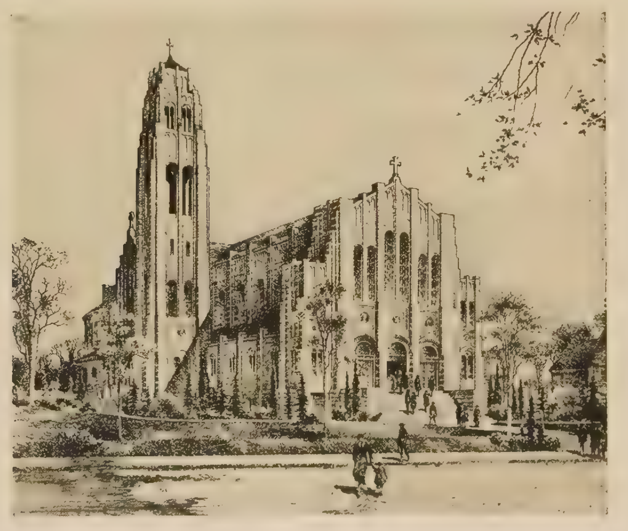


General Greene, recently unveiled on State House grounds, Providence, R. I. Henri Schonhardt, sculptor

The proposed Federal Building for Detroit, Mich., to replace the present antiquated structure. Robert O. Derrick, Inc., architects



St. Justin's R. C. Church, Hartford, Conn., the superstructure of which has just been started. Whiton & McMahon, architects



BOOK REVIEWS

COUNTRY HOUSES: The Work of Frank J. Forster, A. I. A. 183 plates, 9¼ by 12¾ inches. New York: 1921: William Helburn, Inc. $15.

Frank Forster's country houses, based for the most part on the lovely prototypes of Normandy, are known not only in the vicinity of his own home, New York, but in the West and in the South as well. There is a very brief foreword by Mr. Forster himself, setting forth his admiration for the French provincial types, and justifying his practice of adapting them to present-day needs. The balance of the book is from excellent photographs, floor plans, and some of H. R. Bishop's characteristic drawings in white line on black. In all, a stimulating record of notable achievement.

MODERN SWEDISH ARTS AND CRAFTS IN PICTURES. By Dr. Nils G. Wollin. 207 pages, 10 by 12¾ inches. Illustrations from photographs, drawings, etc., including 8 pages in color. Printed in Stockholm. New York: 1931: Charles Scribner's Sons. $15.

Visitors to Sweden in recent years bring back glowing reports of Swedish architecture, but particularly of the arts and crafts affiliated with it. The author, Dr. Wollin, is chief teacher at the High School of Arts and Crafts in Stockholm. His selection covers interior decoration, furniture, textiles, rugs, tableware, glassware, jewelry, garden accessories and printed matter. It is an amazingly versatile and stimulating collection.

AROMATIC RED CEDAR CLOSET LINING. 11 pages, 6 by 9 inches. Illustrations from diagrams. Commercial Standard CS26–30. Pamphlet binding. Washington: 1931: U. S. Department of Commerce, Bureau of Standards. 5 cents.

THE COLUMN ANALOGY. By Hardy Cross. 78 pages, 6 by 9 inches. Illustrations from diagrams. Pamphlet binding. Urbana, Ill.: 1931: The University of Illinois. 40 cents.

IMPRESSIONS OF JAPANESE ARCHITECTURE. By Ralph Adams Cram. Second edition. 242 pages, 6 by 9 inches. Illustrations from photographs and prints. Boston: 1931: Marshall Jones Co. $4.

It was just over a quarter of a century ago that the first edition of this book appeared—one of the best pieces of writing, in our opinion, that Doctor Cram has done. The second edition should find a welcome in the younger generation of architectural students.

MOUNT VERNON. By Paul Wilstach. Fourth edition. 301 pages, 6 by 9 inches. Illustrations from photographs, prints and paintings. Indianapolis: 1930: The Bobbs-Merrill Co. $5.

Fifteen years ago there appeared this notable book descriptive of Mount Vernon, Washington's home and the nation's shrine. The present edition is the fourth, and there are likely to be many more to follow in the supplying to future generations the information available regarding America's best-loved country home.

ELECTRAGIST STANDARDS FOR WIRING INSTALLATIONS. 63 pages, 6 by 9 inches. Pamphlet binding. New York: 1931: Association of Electragists. 35 cents.

RAT PROOFING BUILDINGS AND PREMISES. By James Silver, W. E. Crouch, and M. C. Betts. 25 pages, 6 by 9 inches. Illustrations from diagrams and photographs. Farmers' Bulletin No. 1638. Pamphlet binding. Washington: 1930: U. S. Department of Agriculture. 5 cents.

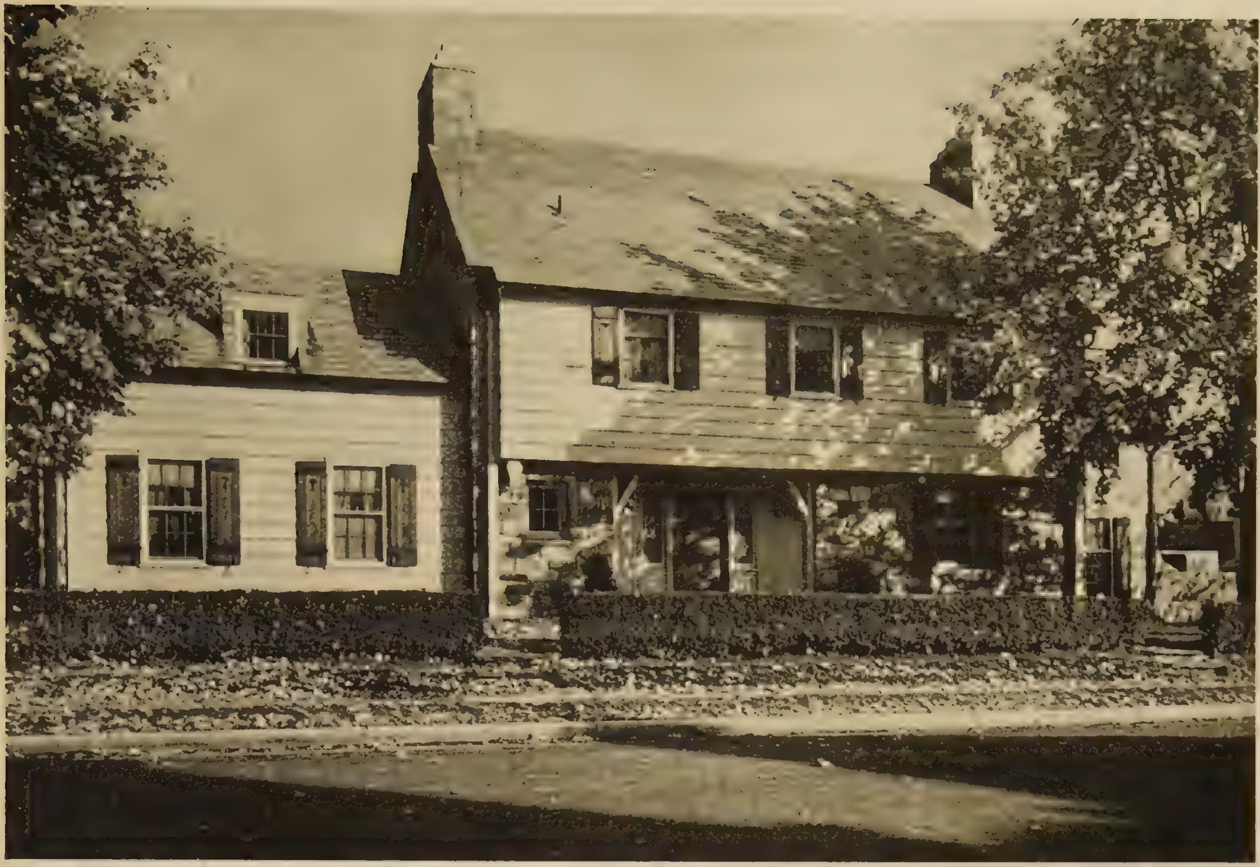
REPORT OF THE COMMITTEE ON CHAPTER HOUSE ARCHITECTURE OF THE INTER-FRATERNITY CONFERENCE. 28 pages, 6½ by 9 inches. Pamphlet binding. New York: 1931: Committee on Chapter House Architecture, Wilbur M. Walden, Chairman, 15 East 26th Street.

A preliminary report, to be followed by a more comprehensive one when the Committee completes its work.

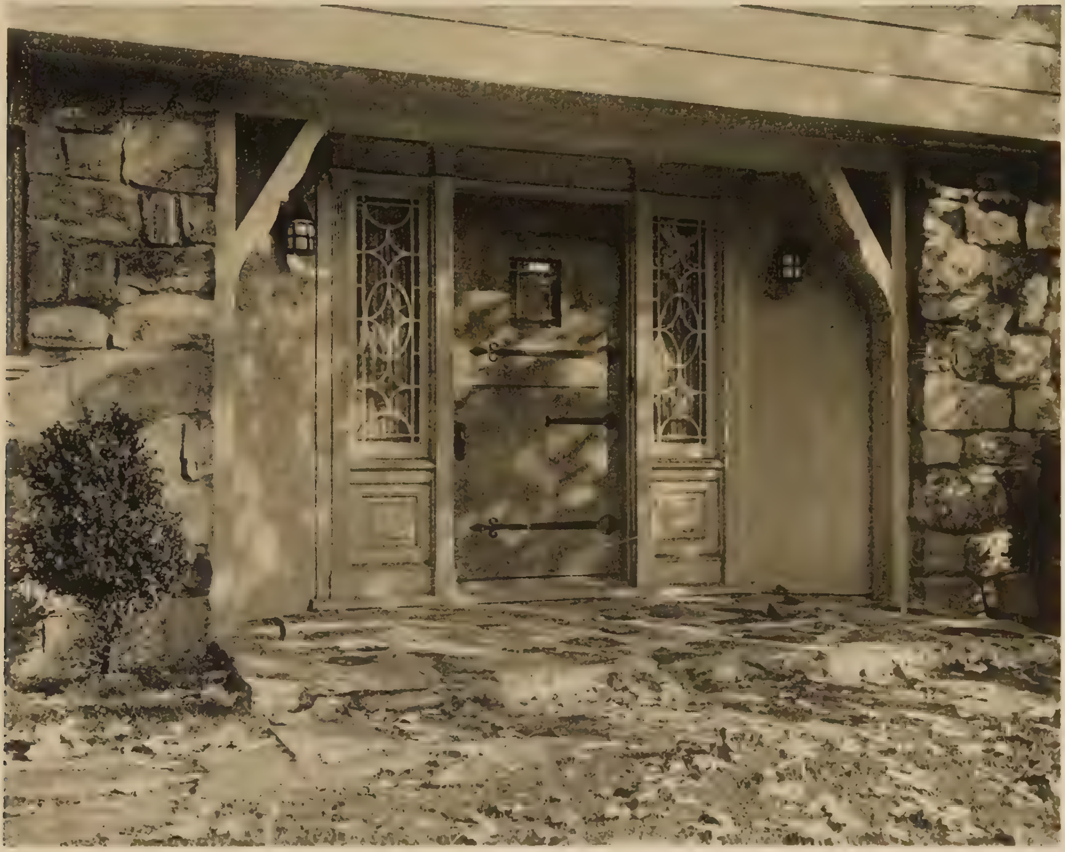
COMPRESSIVE TESTS OF JOINTED H-SECTION COLUMNS. By James H. Edwards, H. L. Whittemore, and A. H. Stang. 33 pages, 5¾ by 9¼ inches. Illustrations from photographs and diagrams. Research Paper No. 277. Reprint from Bureau of Standards Journal of Research, Vol. 6, February, 1931. Pamphlet binding. Washington: 1931: U. S. Department of Commerce, Bureau of Standards. 15 cents.

HANDBOOK OF OIL BURNING. By Harry F. Tapp. 629 pages, 4¾ by 7¼ inches. Illustrations from photographs and diagrams. New York: 1931: American Oil Burner Association. $3.

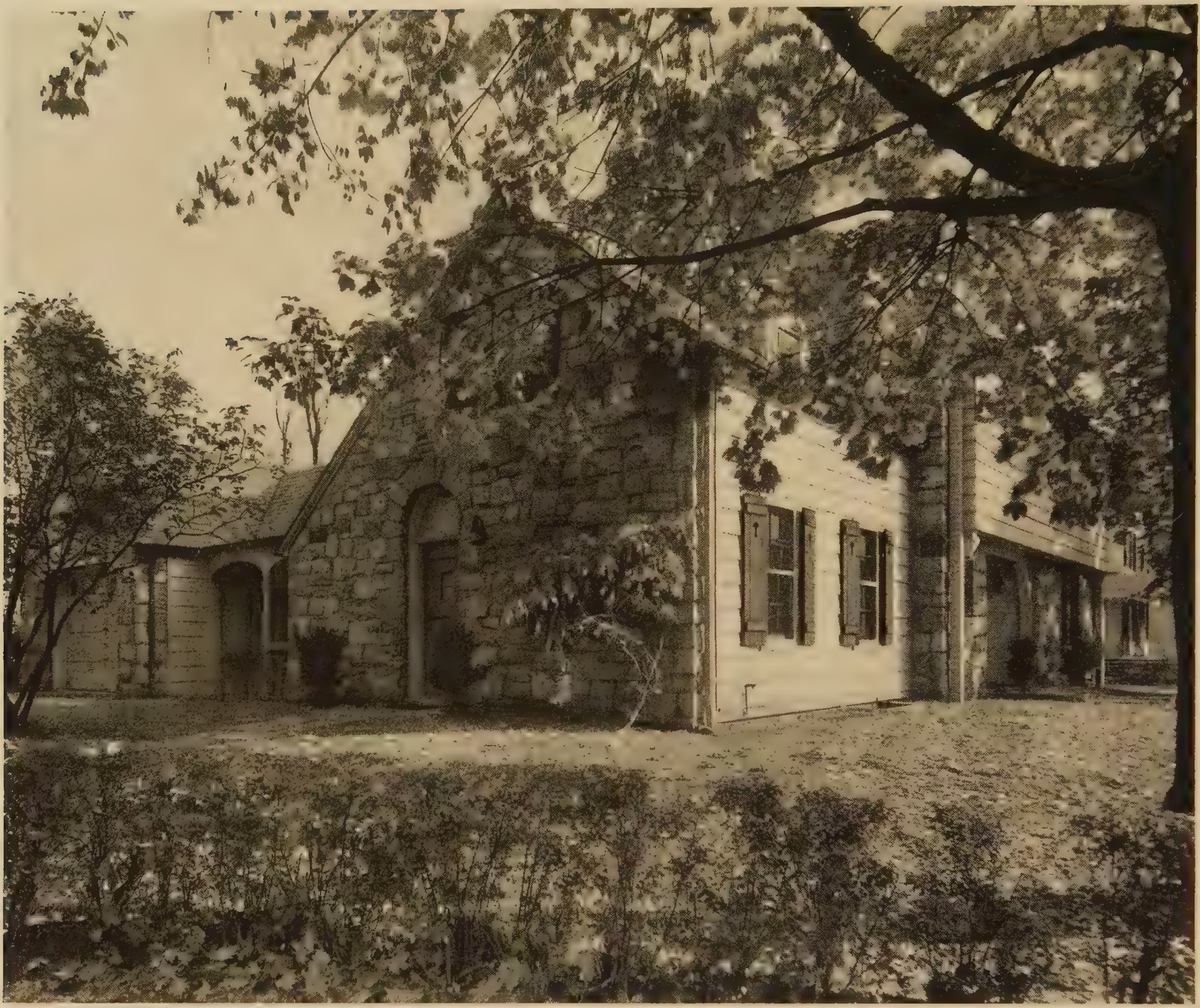
An authoritative handbook which finds for itself a growing need through the rapid development of oil-burning equipment. It apparently leaves nothing uncovered, from the chemistry of combustion through all the ramifications of heat development, with ordinances and regulations, tests and codes, even to accounting and business law.



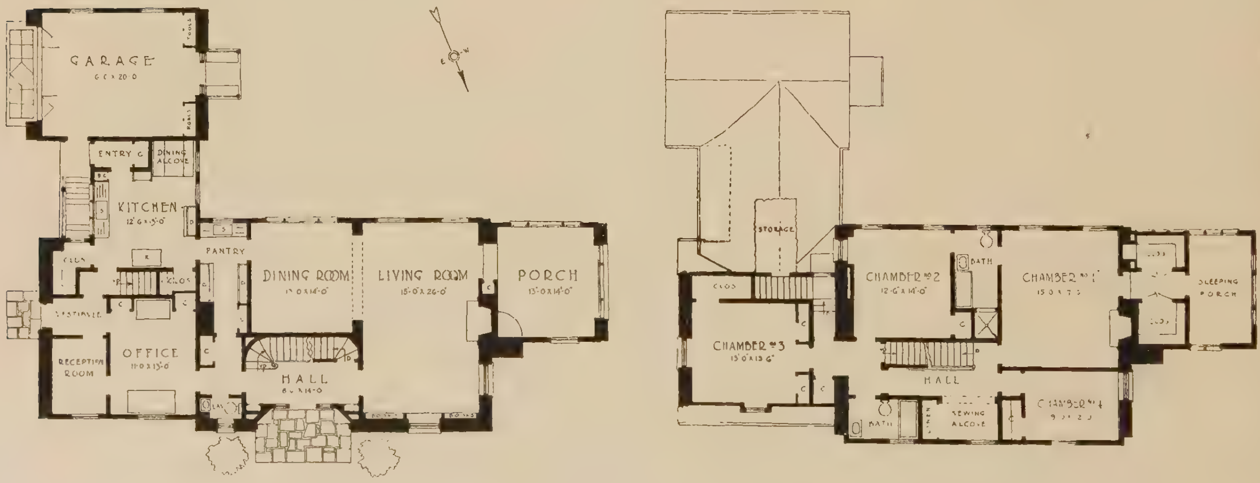
Photographs by Paul J. Weber



House of Dr. Horace Eddy Robinson, Pleasantville, N. Y.
JAMES RENWICK THOMSON, ARCHITECT



A solution of the fairly common problem of the physician's home with which is combined his offices. The entrance to the offices is well separated from that of the house, but both may be reached by a maid without passing through other rooms.



House of Dr. Horace Eddy Robinson, Pleasantville, N. Y.

JAMES RENWICK THOMSON, ARCHITECT

The Liturgical Requirements of Churches

VI. OTHER CHANCEL FURNISHINGS

By F. R. Webber

THE TABERNACLE.—In our previous paper, brief reference was made to the tabernacle. This is a repository for the reserved Sacrament in parishes where reservation is the rule. Generally the tabernacle rests upon the high altar, although it may be found upon a chapel altar, or recessed into the north wall of the sanctuary.

The tabernacle may rest upon the mensa of the altar at the east edge of the mensa and in the midst of the gradine if this is fixed to the altar. If the tabernacle be 12 inches square on plan, the mensa, or upper surface of the altar, must be 33 inches in depth, since there must be from 20 to 21 inches of working space in front of the tabernacle.

There are no fixed dimensions for the tabernacle. It must be large enough to contain the cyborium and pyx. Generally it is made of wood, although it may be made of wrought metal, lined with cedar, olive wood, or some other suitable material. The innermost lining is white silk of the finest quality. Upon the bottom of the tabernacle lies a white linen corporal the exact size of the tabernacle. The tabernacle is provided with a door with lock and key. The door may be of solid oak, or of wrought metal, but it must not be transparent. Upon this door may be carved something pertaining to the Holy Sacrament, or to the Passion of Our Lord, such as a chalice and rayed host.

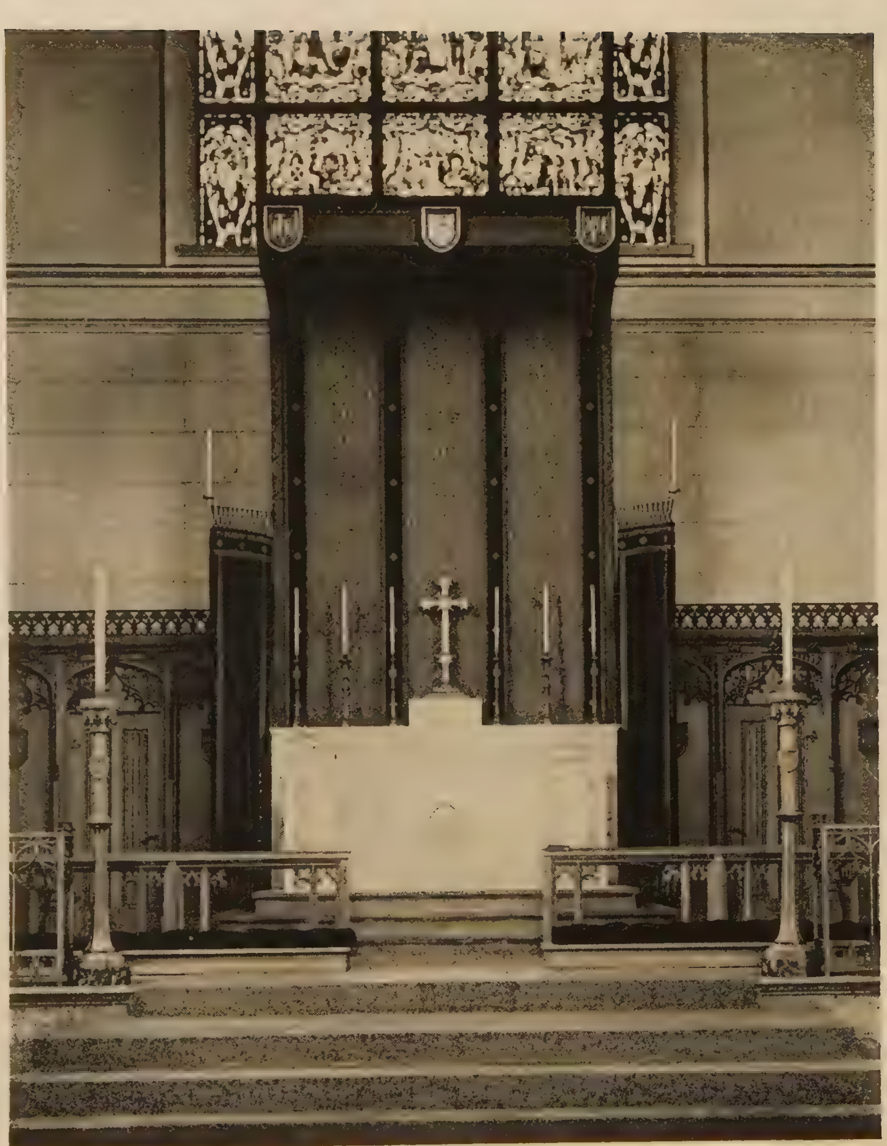
Upon the top of the tabernacle may stand either a crucifix or a cross. Nothing else is permitted to stand upon the tabernacle, and nothing may stand in front of it, not even a cross. When the reserved Sacrament is within the tabernacle, a light, usually suspended from the ceiling, burns before it and somewhat above it. This light must be within an uncolored glass cylinder, and it must not be an electric light. To use a red glass cylinder, as is so often done, is a violation of the rubrics.

The Aumbry.—If the Sacrament is not reserved upon the altar, it is sometimes customary to provide an aumbry for it in the side wall of the chancel. This custom is quite general in many parts of Germany, while the tabernacle upon the altar seems to be of Italian origin. This aumbry is of the size of a tabernacle, and is generally recessed into the wall so that its door is flush with the surface of the wall. It is placed on the Gospel side of the altar, and is at the priest's right hand as he faces the congregation. The same rules that apply to the tabernacle apply likewise to the aumbry. The burning lamp must be used where reservation is practised, even though an aumbry be used instead of a tabernacle.

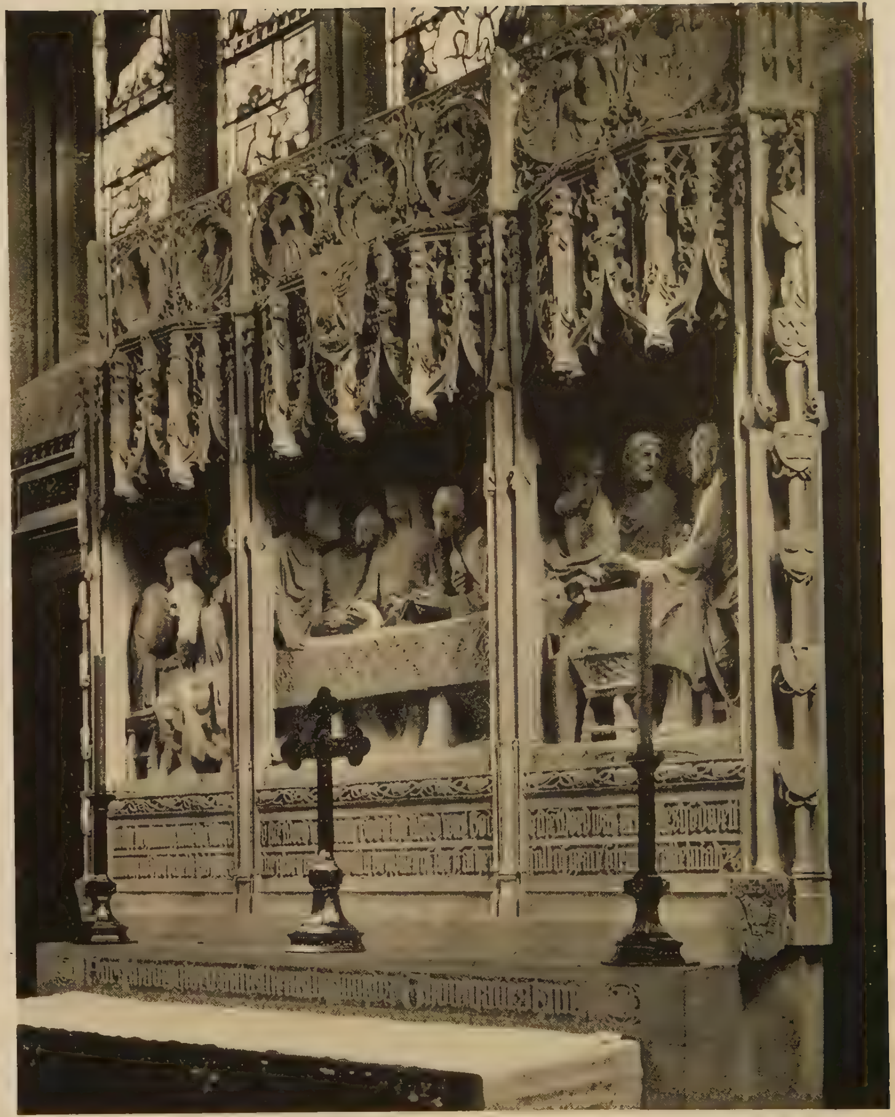
The Altar Cross.—A true crucifix is more traditionally correct than a cross, although either one is permitted. The crucifix either may be what is known as the Passion Cross, or it may be the Cross of the Glorified Lord. The Passion Cross is that upon which a figure of the Crucified Lord is used. The figure itself must not be too gruesomely realistic, but must be treated in a quiet, devotional manner. Many authorities prefer the Cross of the Glorified Lord. This is purely symbolic, and represents the reigning Christ, rather than the suffering Christ. He is shown clad in His prophetic, priestly, and kingly vestments, standing upright, with His arms extended at right angles to His body, so that they are parallel with the horizontal bar of the cross, before which He stands. The fingers of His right hand are extended in benediction, that is, the thumb and first two fingers are extended, and the third and fourth fingers are closed against the palm. He wears the albe, the long pointed chasuble, the stole, the maniple, and the kingly crown, symbolizing His threefold office. This treatment of the crucifix is symbolic of the risen, glorified Lord, standing triumphant before the Cross.

It is sometimes rather difficult to design a crucifix or cross that is in correct scale with the altar. The usual error is to make it too large. From 24 to 30 inches is amply large, and in many cases even a smaller cross might give better scale to the altar. The designer often forgets that the cross ought to be in correct scale with the *altar*, rather than with the reredos.

Candlesticks.—Liturgical churches have from two to six candlesticks. Two are required, and six are permitted, although eminent authorities, such as the Reverend Percy Dearmer, con-



An altar with a low "throne" taking the place of the tabernacle. Note that the tops of the candlesticks are in line with the lower end of the cross proper. Here are six altar candlesticks, the riddle lights, and the two floor candlesticks.
Lutheran Church of Our Redeemer, Chicago; chancel by Hervey Flint



A detail photograph of the altar in St. John's Church, West Hartford, Conn. It is instructive to note the relation of gradine to mensa; also the arrangement of an altar cross with two candlesticks (two are required, six are permitted).
Bertram Grosvenor Goodhue, architect

demn six candlesticks as an unwarranted innovation. But it cannot be denied that six candlesticks have a much greater artistic value than two.

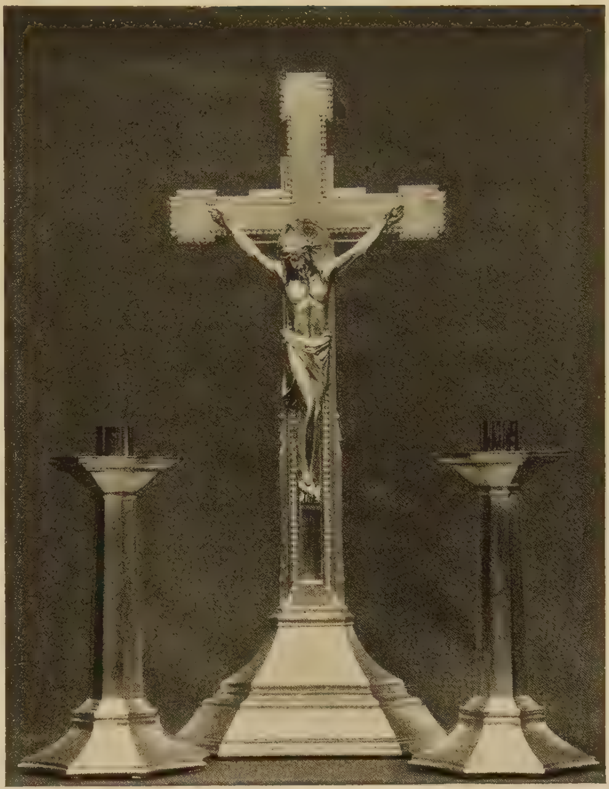
There is no rule governing the design of the candlesticks, except that they ought to conform in design to the crucifix or cross, and that the top of the candlestick proper must come in line with the lower end of the cross, exclusive of its base. That is, if the candlesticks stand upon the altar proper, the cross must be elevated so that the end of its lower arm is in line with the top of the candlesticks.

Nowadays the bases of cross and candlesticks are generally hexagonal in the case of Gothic churches, the hexagonal form being used to represent the six days of creation, and the cross itself the Day of Redemption. If two candlesticks are used, they are said to represent the twofold nature of Our Lord, human and divine, and likewise the Light of the World. If six candlesticks be used, they represent the six days of creation, with the cross or crucifix representing the Day of Redemption.

Doubtless all such symbolism was read into these things long after they had been in accepted use. It is probable that candles were used in earliest days to furnish light so that the priest might read his missal. But as time went on a symbolic meaning was read into them. Today they no longer have a practical value, but are purely liturgical and symbolical.

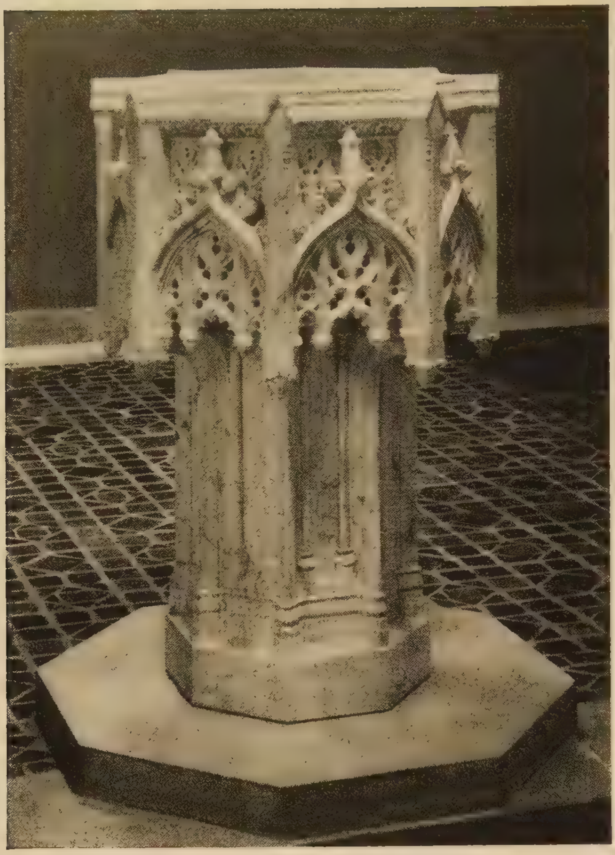
It is not necessary to say that the candlesticks must not be equipped with electric lights. This is a species of vulgarity found in our own country. We have never seen it abroad. It is a thing that cannot be too strongly condemned, for it takes away the real ceremonial meaning of the candlesticks, and makes mere lighting fixtures out of them. All emotional value is lost, for there is something about the living, pulsating flame of a genuine candle that cannot possibly be found in the cold, steady glow of a flame-tipped bulb. Candles must not be too white in color, and 75 per cent pure beeswax if possible, although the commercial sort are generally about 51 per cent beeswax.

Seven-branched candlesticks have no liturgical or ceremonial significance. They are not improper, but if used, they must be looked upon as purely decorative and nothing else. They cannot be used as substitutes for the two ceremonial lights. If three-branched, five-branched, or seven-branched candlesticks be used, at least two single candlesticks must be provided in addition, as the true ceremonial lights. In the Episcopal church, two additional candlesticks ought to be provided. One of these is used where there are six candles on the altar. If the bishop of the diocese celebrates the Eucharist, a seventh candle is lighted. Then there is the candle that is placed on the credence and lighted at the singing of the *Sanctus*, and carried to the south end of the altar and placed thereon. In many parishes, however, this is not customary.



Crucifix and candlesticks carved out of English oak and covered with gold leaf and lacquer. Drip pans and sockets are of wrought brass. Designed and carved by Herbert Read

The Credence Table.—In a liturgical church the architect must provide for a credence table. This is a small table, often about 15 by 30 inches in size. The credence stands at the south of the altar, and ought to stand against the south wall of the sanctuary rather than against the east wall. This principle is frequently violated, however, due to our American mania for display. Too often does one see a credence table against the east wall, with a large brass alms bason propped up so that all may be sure to know that the parish owns one, and this flanked by candlesticks. It is proper to place the large alms bason upon the credence, if it be allowed to rest flat upon the table, but there is no authority for candlesticks, and the architect



A modern font, in marble, done in the spirit of the fifteenth-century examples of England. Corbusier & Foster, architects

ought not to encourage them. It is so easy to make the credence table look like a miniature altar, and thus introduce a distracting note into the composition. Everything ought to centre upon the altar, and nothing of a disturbing or eye-catching nature should be permitted near to it. Hence the wisdom of placing the credence table against the south wall. In some cases a credence shelf is used instead of a table. This may be bracketed against the south wall of the sanctuary, or it may be recessed into the wall either wholly or in part. Like the credence table, this shelf must be large enough for the alms bason and for the cruets used at Holy Communion.

The Piscina.—All liturgically minded people admit that a dignified method ought to be provided for disposing of the wine remaining in the chalice after Communion. In some of the earlier American congregations the clergyman and his assistants were required to consume any such wine in a reverent manner, or to pour it upon the earth in the form of a cross. Nowadays the piscina is generally used. This is a small, bowl-like thing, usually of stone, recessed into the south wall near the altar. A drain connects it with the earth. Under no circumstances may it be connected with the common sewer.

A piscina may be within a niche with a traceried canopy of stone or carved oak. There ought to be a piscina for the high altar, and a separate one for each minor altar. The font ought to have its own piscina, if possible.

The Communicants' Rail.—This is said to have had an amusing origin. Just as canopied pulpits and clergy seats originally protected priests with bald pates from catching cold in a drafty church, so the communicants' rail, solid in early days, had a practical purpose. It is said that it was erected in days when lord and peasant brought their faithful dogs to church. The rail was to keep dogs from defiling the altar.

A rail is not, strictly speaking, enjoined by the rubrics, but it has a liturgical use, in that it marks the transition from choir to sanctuary, and gives added dignity to the altar. It ought to be five, six, or more feet west of the lowest altar step, and of open construction. In Roman Catholic churches it is generally at the chancel's entrance. In Episcopal and Lutheran churches it is placed about fifteen inches east of the edge of the communicants' step and five or six feet from the lowest altar step. In Episcopal and Lutheran churches there is an opening in this rail at least as broad as the centre aisle. A stout bar of oak, which telescopes into a section of the rail, is slid across this opening at Communion. During the week, a heavy silk rope, with hooks on each end, is stretched loosely across it.

The Sedilia.—In the older churches, the priest usually remained in the sacristy when not actually officiating at the altar or preaching. In modern times, three seats are to be found recessed into the side wall of the chancel. No architect of taste will permit high-backed chairs against the east wall of the chancel. These introduce a restless note into the composition. Sedilia, recessed into the side wall, are dignified, inconspicuous, and may be subjects for moderate enrichment. Each seat ought to be not less than twenty-four inches in width.

The Bishop's Chair.—In the Episcopal Church, a bishop's chair is generally found placed against the north wall, and facing the altar. The usual mistake is to make it too ornate, under the mistaken notion that it is a bishop's throne. Such a throne is proper only in a church of true cathedral rank. In a parish church it must be a true bishop's chair.

NUMBER XVI

IN A SERIES

OF

Working Drawings

By Jack G. Stewart

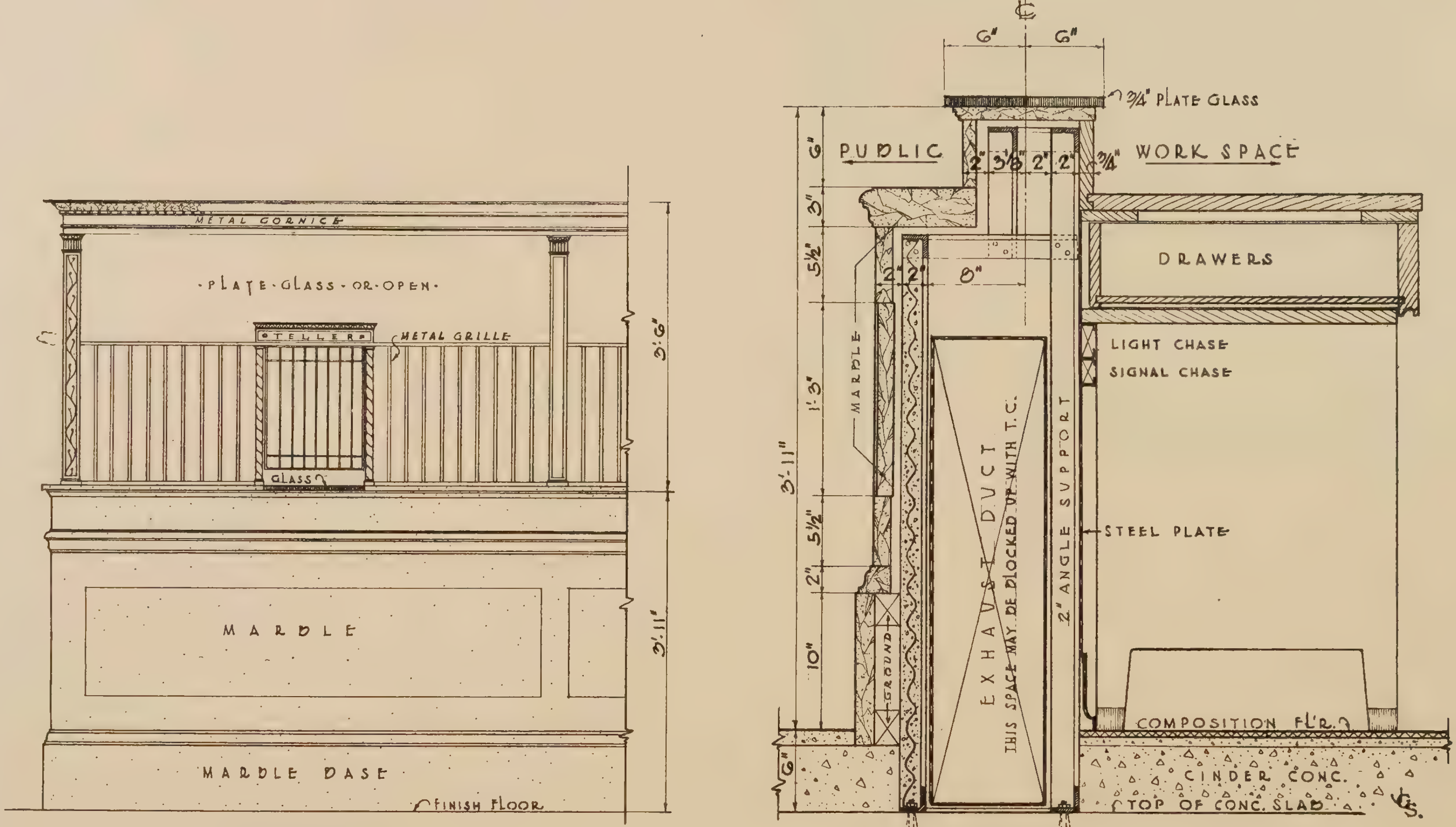
This series, in which one drawing will appear each month, is designed to cover the smaller practical problems that confront the architect in his day's work. The subjects chosen are those which, while not uncommon, call for some experience and knowledge of approved solutions. Next month the subject is a Detail of Metal Louvres

* * *

ARCHITECTURE
CHARLES SCRIBNER'S SONS

PREVIOUS SUBJECTS IN THIS SERIES

I. Flagpole Holder on an Exterior Wall
II. Radiator Enclosures
III. Cigar Sales Counter
IV. Woodwork in a Library
V. Built-in Kitchen Cupboard
VI. Various Trims and Mouldings
VII. Telephone Booth
VIII. Men's Toilet
IX. Window Spandrels
X. Circular Stair for a Residence
XI. Detail of Metal Stair Construction
XII. Detail of Elevator Construction
XIII. Detail of Folding Partition
XIV. Detail of Counter-weight Slide Door for Dumb-waiter
XV. Scale Detail of Mantel



·ELEVATION·

·SECTION·THRU·COUNTER·

·DETAIL·OF·BANK·SCREEN·&·COUNTER·

·SCALE:

·PLATE·No·16·

Some Pitfalls in Supervision

By W. F. Bartels

XIV. PLUMBING FITTINGS

UNDER the pressure of existing competition in the building trades, many plumbers definitely count on making substitutions after the contract is signed. The original bid is often submitted low with certain money-saving changes in mind. After being awarded the contract it is necessary to convince the owner (usually over the architect's head) that So-and-So's valve is really as good as or better than the one specified; it supposedly can be obtained more quickly and thus effect a saving of time in the installation. It is not mentioned, however, that So-and-So's valve will not stand up as long as the one specified. Likewise with other articles, such as pumps, which enter into the plumbing contract. The plumber will advance the idea that "service" can be more readily obtained for the pump he wishes to install. The real reason, of course, is that there will be a saving over the one specified. The superintendent should realize that the architect or engineer has specified a certain make because the parts are standard, easily obtained, and in the end the owner's maintenance cost will be less.

In the matter of tanks the superintendent should be on the lookout for a number of defects or evasions. Tanks must be properly supported and braced. They must be located so that access to the valves can be readily obtained after the enclosing walls are built. And it is always wise to check size, capacity, thickness of material, and location of outlets.

To enumerate the entire list of items a superintendent must check up on in plumbing would indeed be a lengthy compilation. Only those which most affect the fitness and longevity of the system will be considered here.

In the soil lines the superintendent may observe a piece of pipe being screwed into a cast-iron fitting. No wicking should be used. This will very likely cause a split to develop, since the cast iron cannot take the strain as can steel pipe. And if the split does occur it will be so "doped" up as to avoid detection. However, when a piece of steel pipe is to be caulked into a cast-iron fitting a pipe ring should be used on the steel pipe in order to prevent the oakum from getting into the fitting and thus causing a stoppage. This is a precaution well worth observing. Where close nipples connect pipes or fittings the nipples should be made of extra heavy material. The reason for this is at once apparent when the reduction in thickness due to the threading is taken into consideration. Thus the close nipple has less strength, due to its thinness, than the pipe from which it was made and consequently will be the first part to give way if subjected to any strain.

If there are any fixtures emptying into horizontal lines which also take care of higher vertical lines, they should have their own horizontal line until the next drop is reached. They should not be run into the main line until they pass the bend and re-enter the vertical section. If this is not done there is imminent danger of the waste backing up in the fixtures. This is due to the fact that the waste water running along the horizontal is slowed up by the down bend. Thus by its own impetus the water is forced through any outlets on the horizontal line. Oftentimes this piping condition occurs over halls or larger rooms on the main floor and of course when the water backs up the ceiling decorations may be ruined.

The traps on bathtubs are important. More often than not they occur in places difficult of access. If a beam obstructs the regular trap, a shoe trap may have to be substituted to give the tub the proper drainage.

As to means of keeping water in the tub, the rubber stopper is regarded by many as obsolete. While concealed stoppers may have an advantage in appearance and be considered up to date, nevertheless the rubber plug is still one of the best ways of preventing the water from being polluted. The standing-waste type allows the clean water put in the tub to come in contact with the remains of the water, soap, residue, etc., that was used by the previous bather. Of course this used water may be washed down, but part of the dirt in all likelihood will adhere to the pipe and will float up into the fresh tub of water being drawn. Then too the overflow is via the same route as the waste, *i. e.*, through the hole in the bottom of the tub. A hasty bath, a washcloth left in the tub, and a leaky faucet will combine to flood the bathroom.

Another concealed-stopper type is the bi-transit waste. It is one of the likeliest to get out of order, and must therefore have a means of access. This results in an awkward condition where there is no closet in back of the tub and a door must be cut into a panelled wall of a dining-room, master's chamber, or something of equal importance.

Another type is known as a pop-up valve. While it is not always absolutely tight it is preferable to the standing and bi-transit types by all who give the matter a little consideration.

The pipes connecting the traps of sinks and washtubs are generally of seventeen and twenty gauge. The superintendent should see that the one specified is used; or, better yet, have the stamp of the maker on it. If the stamp is that of the manufacturer who made the fixtures it is safe to assume it is sufficiently heavy. When washtubs are installed in the cellar there is often provided a wooden platform for the user of the tubs to stand on. When these tubs are furnished their height should be taken into account when setting the tubs so as to prevent their being too low.

In the matter of water-supply lines, pump lines should not have sharp turns. The latter should be made with long-sweep ells rather than the regulation right-angled elbow. The valves should be examined to see that gate valves are installed where called for and that globe valves have not been substituted. The working part of a gate valve is like a sliding door. When the valve is open there is no obstruction. In the globe valve the water must flow around an obstruction when the valve is open. It is also well to see that all valves called for are installed. There is nothing more disconcerting to the superintendent of a building than to try to shut off a water line and find no valve with which to do so.

Sometimes where brass pipe connections are in inaccessible locations the engineer will call for them to be sweated on. This consists of putting a thin coat of solder on the male thread by means of the blow torch, then heating the elbow or sleeve and screwing the thread in. This eliminates any possibilities of a leak and it is well worth while to see that it is done.

It is well known that a certain amount of air is forced out of water when it is heated. Engineers lay out their hot-water lines with this in view. The superintendent should see that all work is carried out in strict accordance with the drawings. Nothing is more annoying than to turn on a hot-water faucet and get nothing but a chugging noise and air. Then, after a moment, with a hiss and splash the hot water shoots out, usually to find the innocent user off his guard. Proper design and installation of piping will prevent this.

It seems almost farcical to say that the superintendent should check up the plumber to see that all his tanks and other large pieces of apparatus are in before the bricklayers close up the large opening. And yet not only in small buildings but in some of our largest have tanks been left out until after all possible openings they could go through were closed up. Of course, the plumber or steamfitter will have to pay for a new opening being made but that will not compensate for the time lost and inconvenience caused.

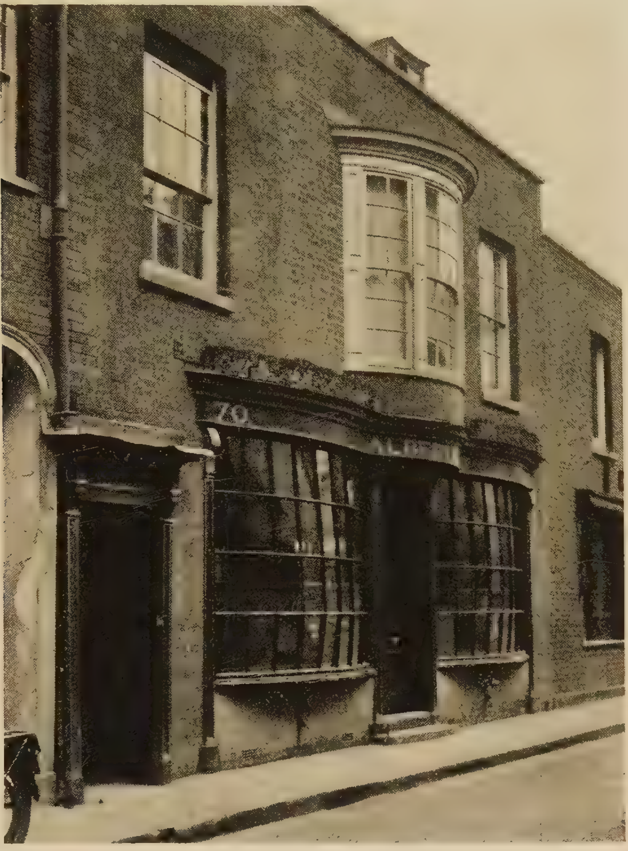
Some tanks are specified to be copper lined, while others are coated with a special preparation designed to prevent rust. Wood tanks are, as a rule, of cedar or cypress, which will not deteriorate as quickly when constantly wet. These latter should not be erected too long before being filled, as they will dry out too much and thus cause buckling, with its consequent risk when finally filled with water.

Previous instalments in Mr. Bartels's series have appeared as follows:

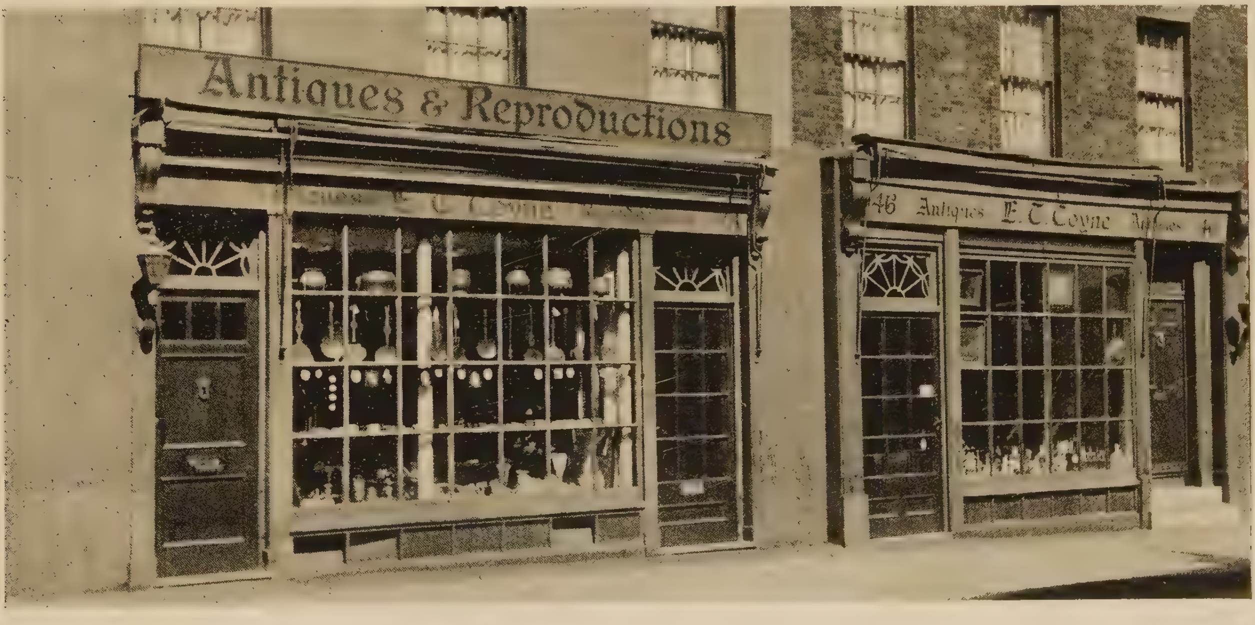
I. Steel-tube Piles—Aug., 1930
II. Piles and Rock—Sept., 1930
III. Concrete—Oct., 1930
IV. Cinder Concrete Floor Arches; Brickwork—Nov., 1930
V. Brickwork; Stonework—Dec., 1930
VI. Steel Framing—Jan., 1931
VII. Wood Framing; Interior Woodwork—Feb., 1931
VIII. Interior Woodwork—Mar., 1931
IX. Plastering—Apr., 1931
X. Plastering; Wood Floors—May, 1931
XI. Floors (Cement, Tile, Terrazzo, Marble, Linoleum)—June, 1931
XII. Plumbing—July, 1931
XIII. Plumbing; Gas Lines—Aug., 1931

English Shop Fronts

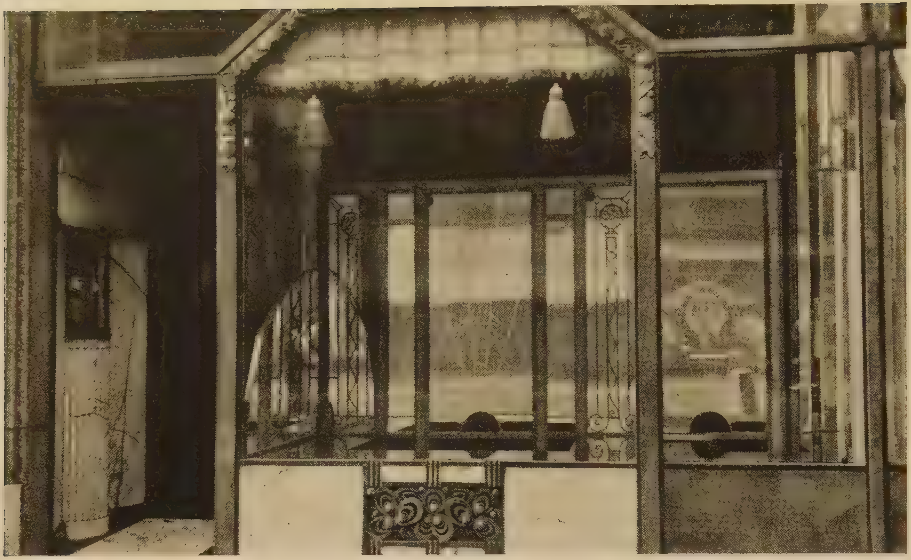
PHOTOGRAPHS AND CAPTIONS BY GERALD K. GEERLINGS



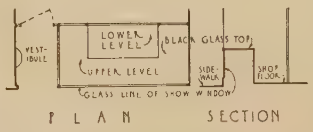
Tailor's Shop, Winchester (1770), a double-bowed bay, unusual because of its great curvature both horizontally and vertically, and an equally unusual motive of a curved bay surmounting the entrance hood. Perhaps one never sees double-bowed windows in current work because the mill men have forgotten how to make them. In this example the lower woodwork has been painted an unfortunate chocolate color, but above the building is cheered by yellow-red to crimson brick and white woodwork



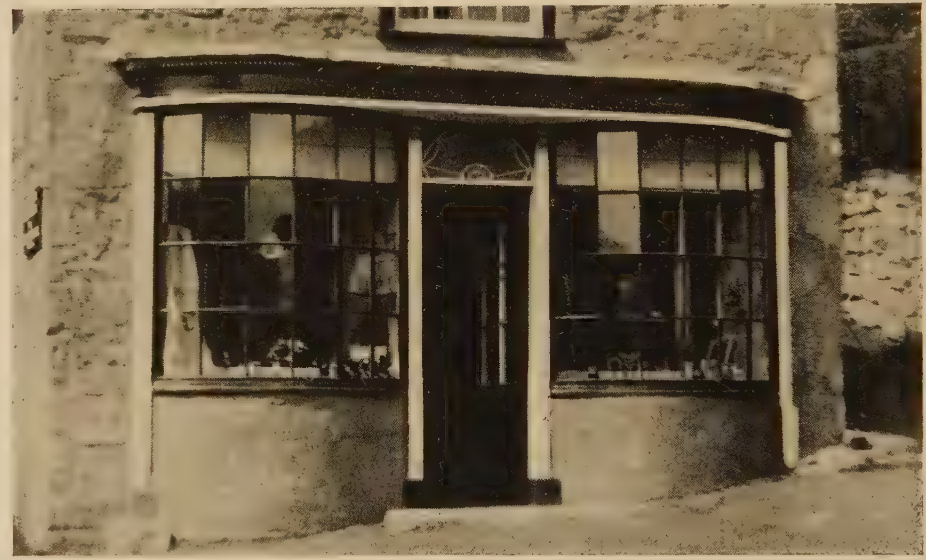
Numbers 46 and 48 Church Street, London. Here the design clearly voices the business of the shop. It is difficult to conceive of a more fitting front for the shop dealing in English antiques and reproductions. The wood is gray-green, and the doors dark blue. Out of sight above is an interesting plaque which dates the building: Wyple Place, 1792

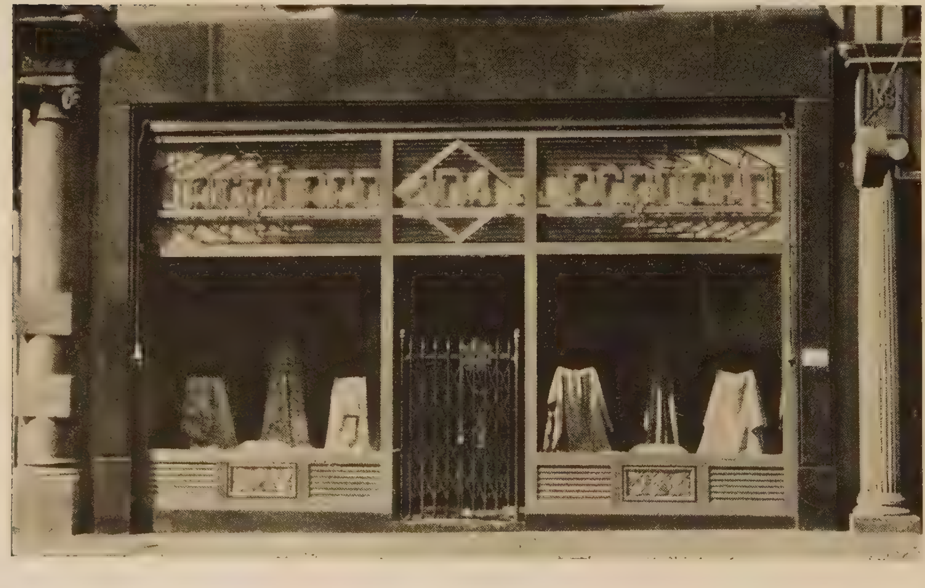


A Regent Street shop in London. Combinations and contrasts of materials are employed here to create a successful front—base panel and vestibule of white marble with black veining; window stiles of ornamented and cross-ribbed bronze in a deep verde-antique finish; and the interior display top of black glass. The plan and section below show the unusual arrangement of the inside

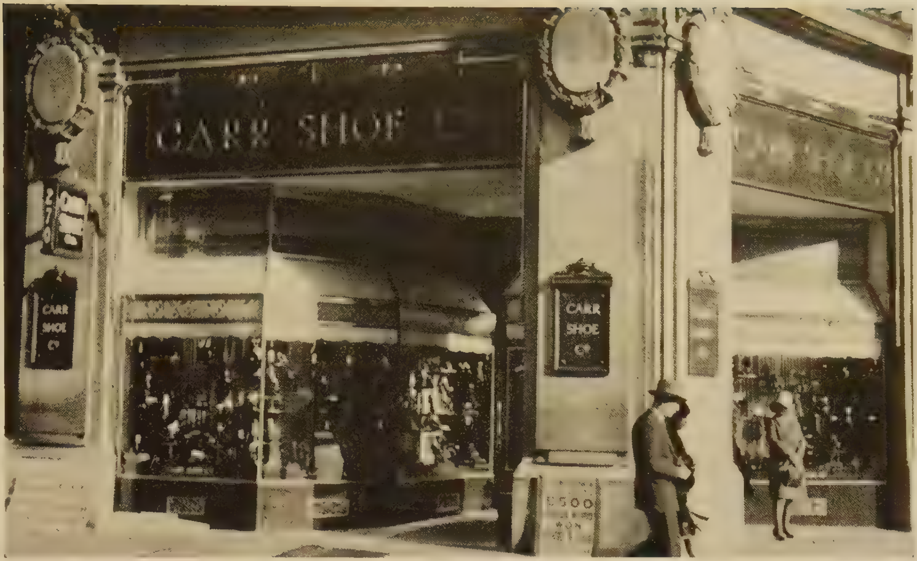


A shop front in Godshill, Isle of Wight. The attenuated pilasters and the twin bays, bowed both horizontally and vertically, combine to produce a distinctive design; large panes of glass, clumsy pilasters, lack of finesse, would make the same motif bromidic. While the design has accredited ancestors, the painting gives it a flavor of modernity; muntins and window frames black, frieze and window-sill Adam blue; fanlight panel of dark blue with white muntins, stone under window painted buff-gray

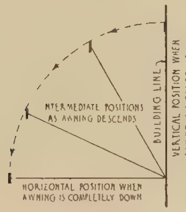


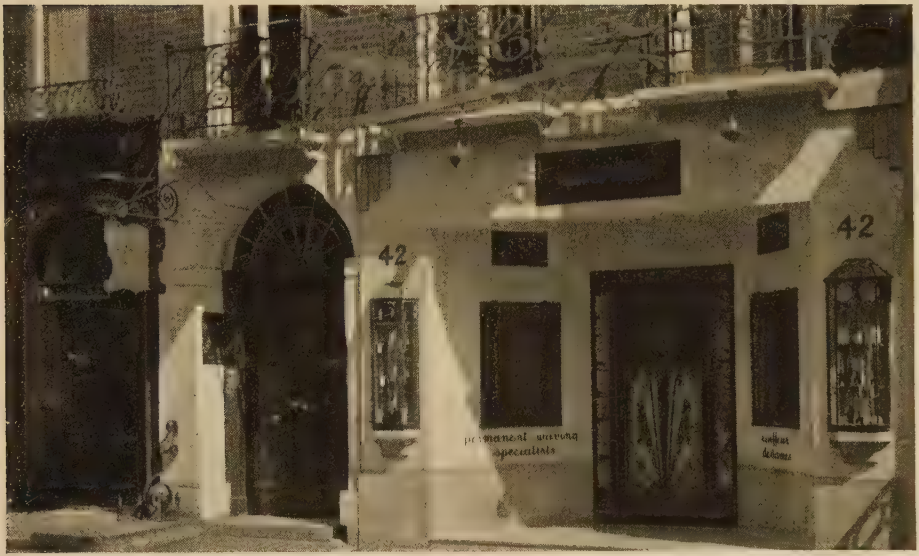


Shop front in New Bond Street, London. An unusual exterior use of lightly varnished unstained oak creates a pleasing unity with the interior, the latter being of similar material. The ribbed stiles and horizontal panels, together with the modern decorative panels below, keep pace with the current demand for the original shop treatment. Mounted on a series of criss-cross and horizontal wrought-iron bars are polished steel letters enlivened by red stripes

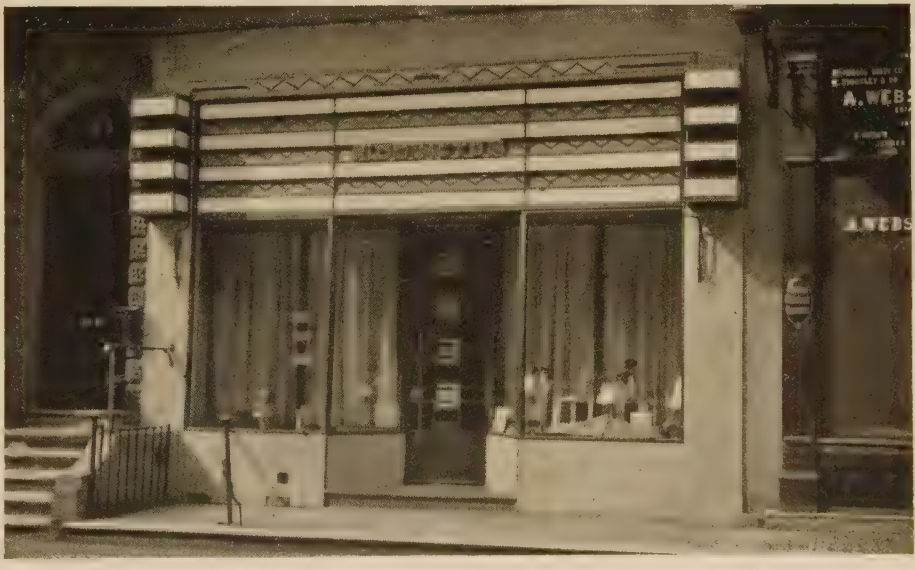


In Oxford Circus, London. There is an unusual awning roller and screen here. Instead of the usual rod, there is a plain facia plate which covers the slot and which, when let down, remains in a vertical position where it might well be utilized for displaying the name of the shop (See diagram below)

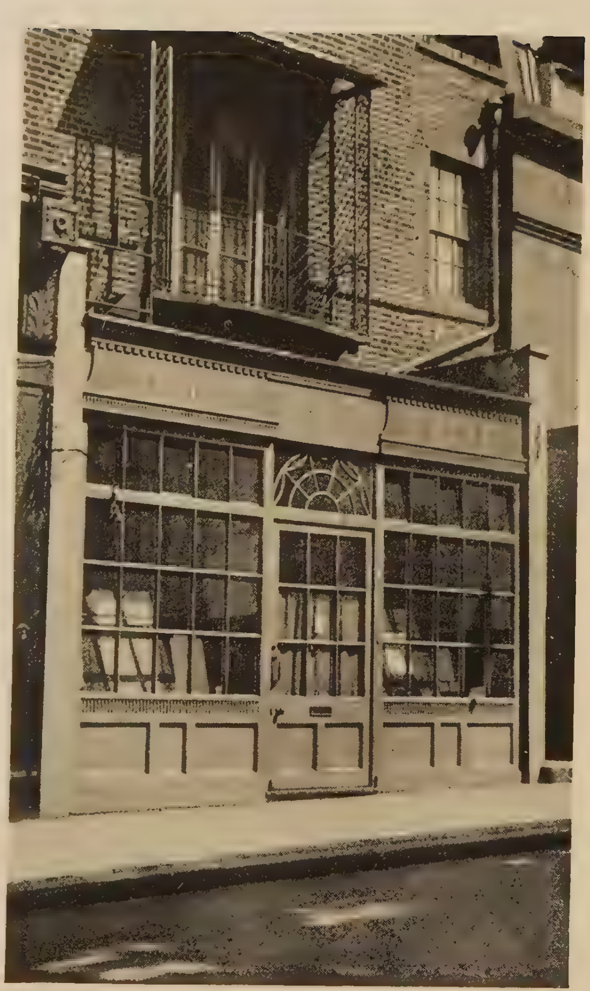

INTERMEDIATE POSITIONS AS AWNING DESCENDS
BUILDING LINE
VERTICAL POSITION WHEN AWNING IS ROLLED UP
HORIZONTAL POSITION WHEN AWNING IS COMPLETELY DOWN



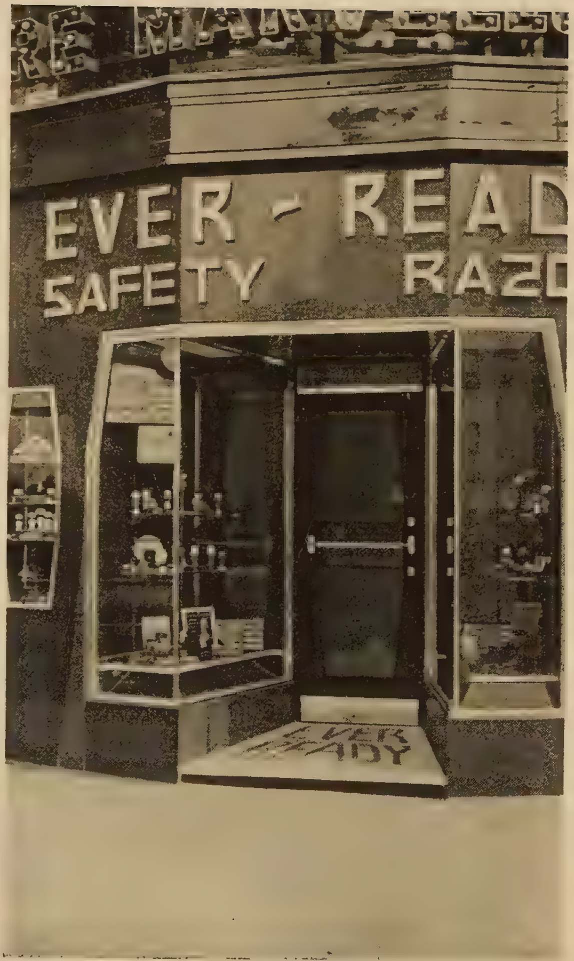
Whether one agrees or disagrees with this design of 42 Conduit Street, London, it must be admitted to its credit that everything about the redecorated ground floor insists that it is a beauty parlor, and nothing else. The front is cream-colored marble, with apple-green base, upper rectangular corners, topmost band course, and bases of the oriel display windows. The latter have dark green roofs, bronze frames and silk hangings. Etched glass is used in the doorway



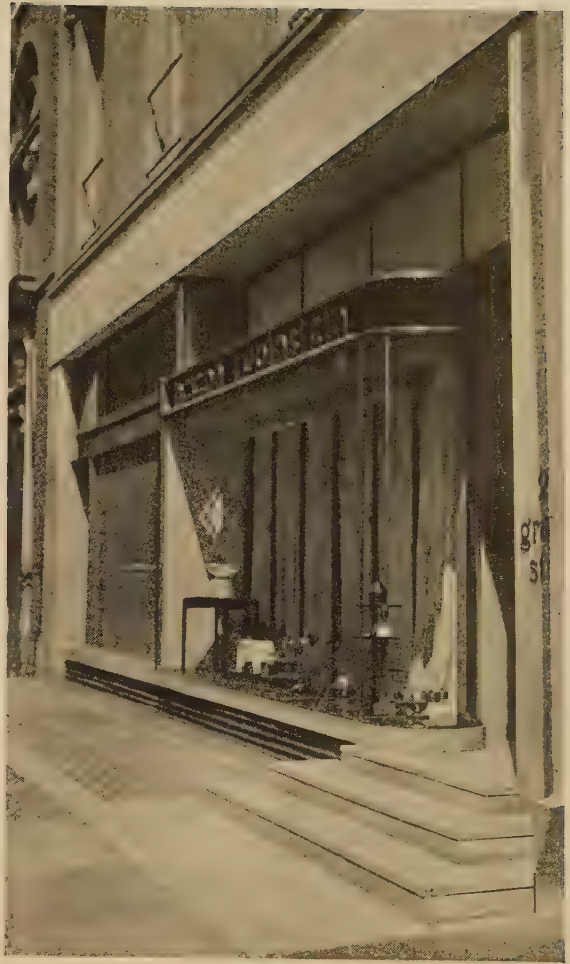
On Dover Street opposite the Underground Station. Confections à la mode, inside and out. The shop front makes up in color what it may lack otherwise. Above the window the glass is gray (white in photograph) and red (black in photograph) with red metal bands and name. The window back is hung with green silk. To the sides of the window, and below it, green square tile are somewhat varied in color, but mostly emerald. The door and glass frame are red



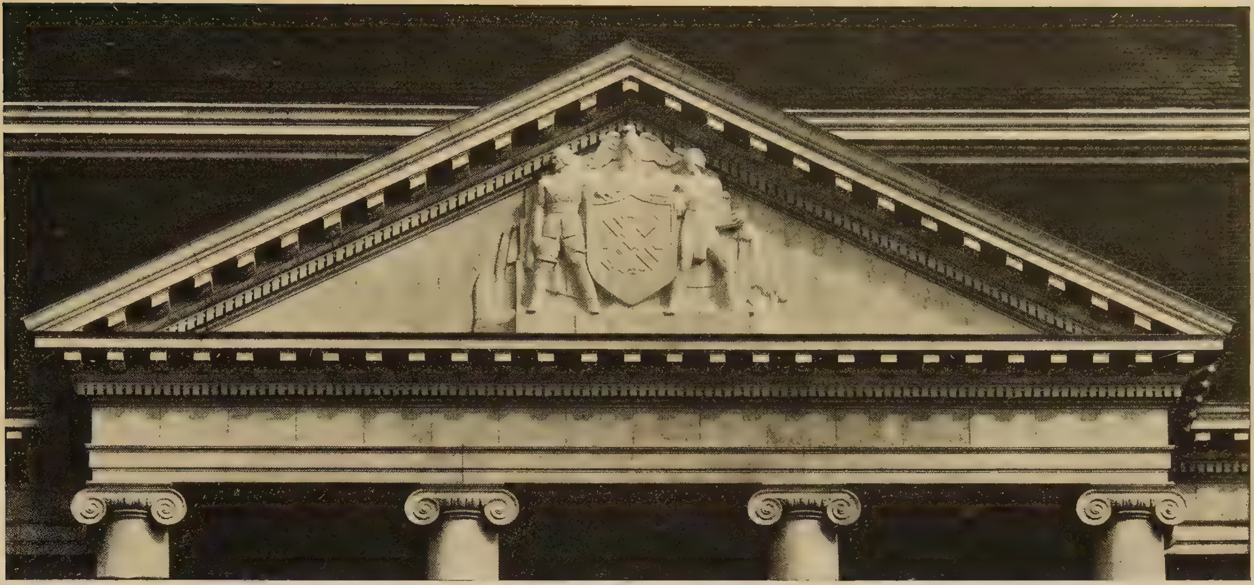
A singularly appropriate treatment of a publisher's window at 152 Church Street, London. The method of breaking the frieze over the windows, and the employment of denticular flutes at the bottom of the windows are both refreshing innovations. The woodwork is painted a yellow ochre, the window curtains are a navy blue, the brickwork is a dull yellow-gray



While this diminutive shop in Piccadilly Circus, London, does not contribute any particular beauty to an already ugly façade, its polished black marble and glittering silver window trim, letters, and band-course facias do succeed in boldly announcing the shop's presence. With better designed letters, and a less crumpled general window shape, the same materials could be beautiful as well as audible

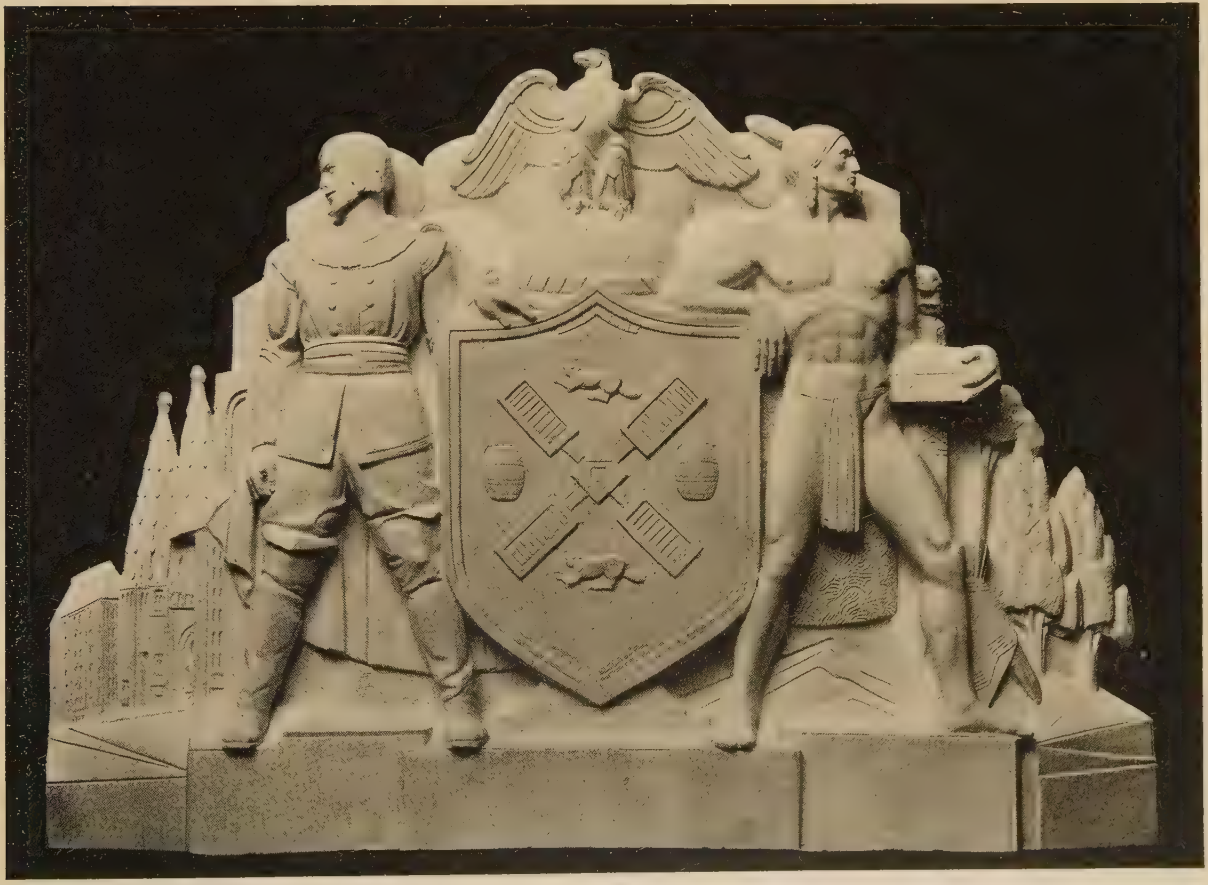


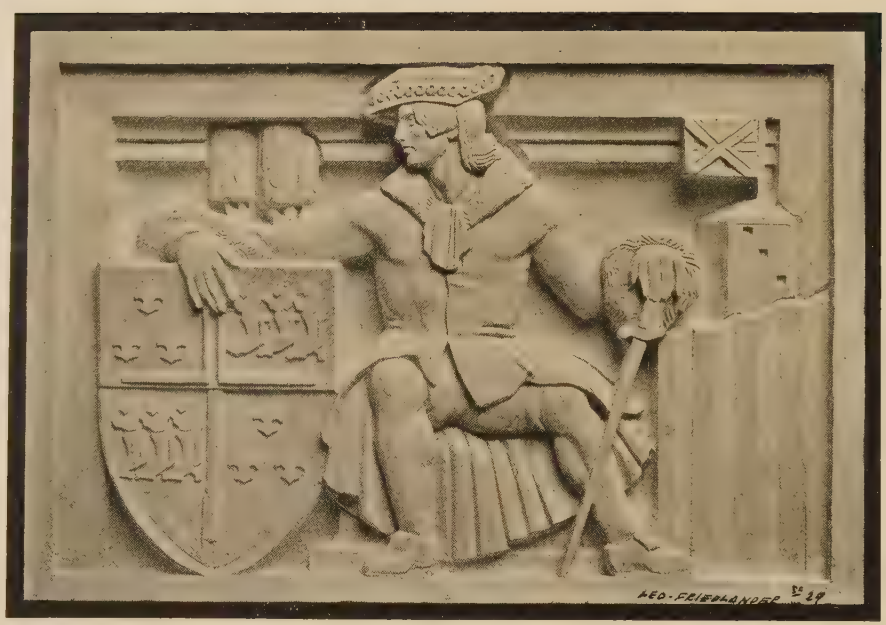
The architectural formula for this beauty shop in Dover Street has been reduced to a simple common denominator of effective contrast in shapes and color. Window frame and window head are in dark greenish metal, the letters of brilliant red. The color of the gray limestone lintel and jamb and the cream-colored marble base are recalled in the patterned curtain



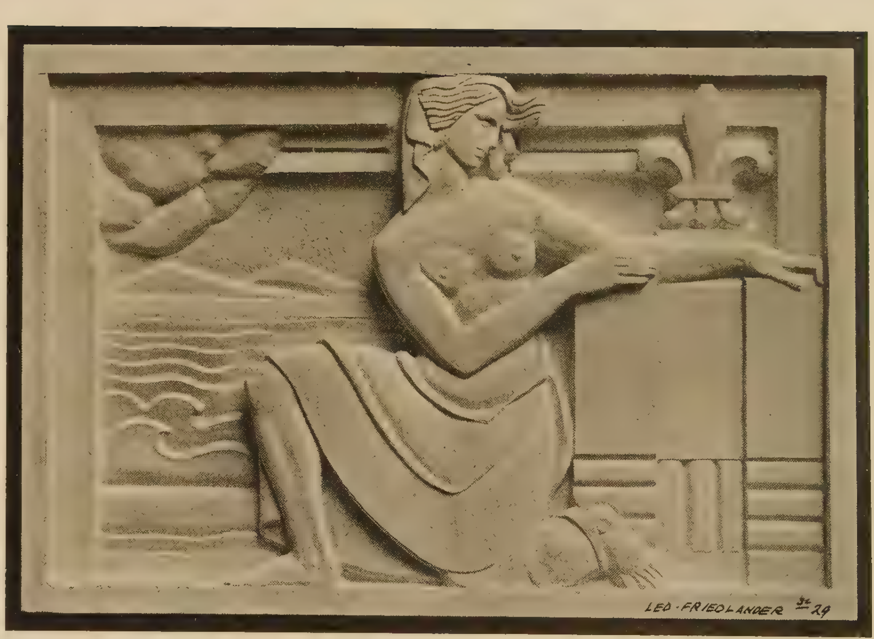
Sculpture for Jefferson County Court House, Birmingham, Ala., by Leo Friedlander

HOLABIRD & ROOT, ARCHITECTS

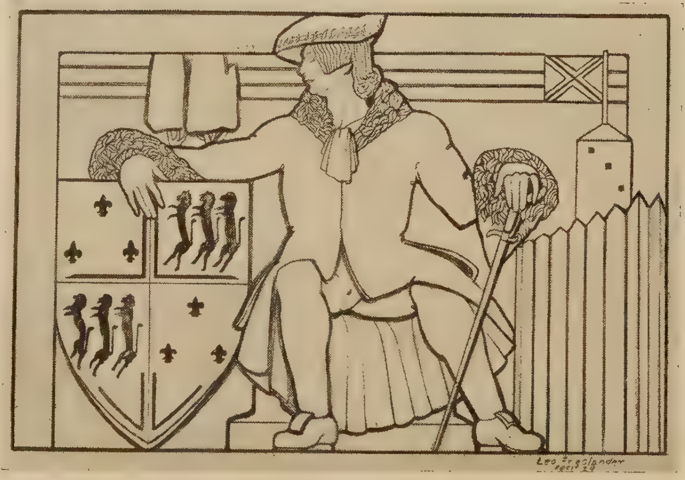




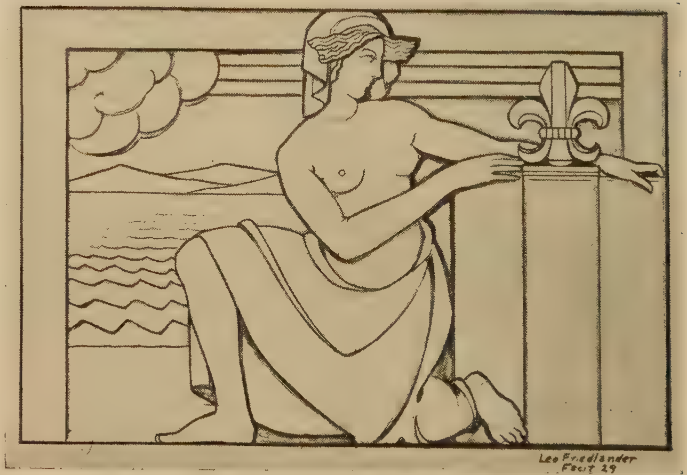
"Under English Government"

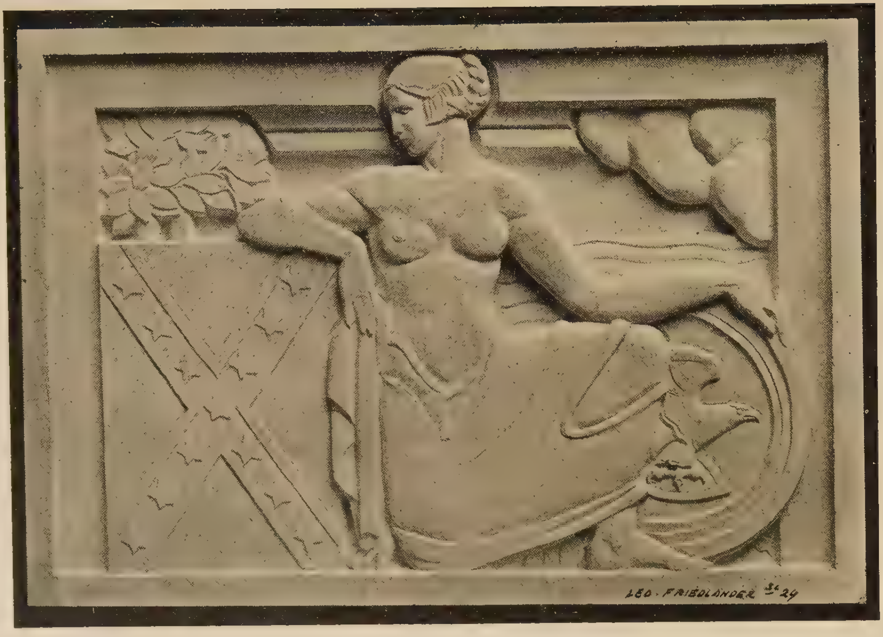


"Under French Government"

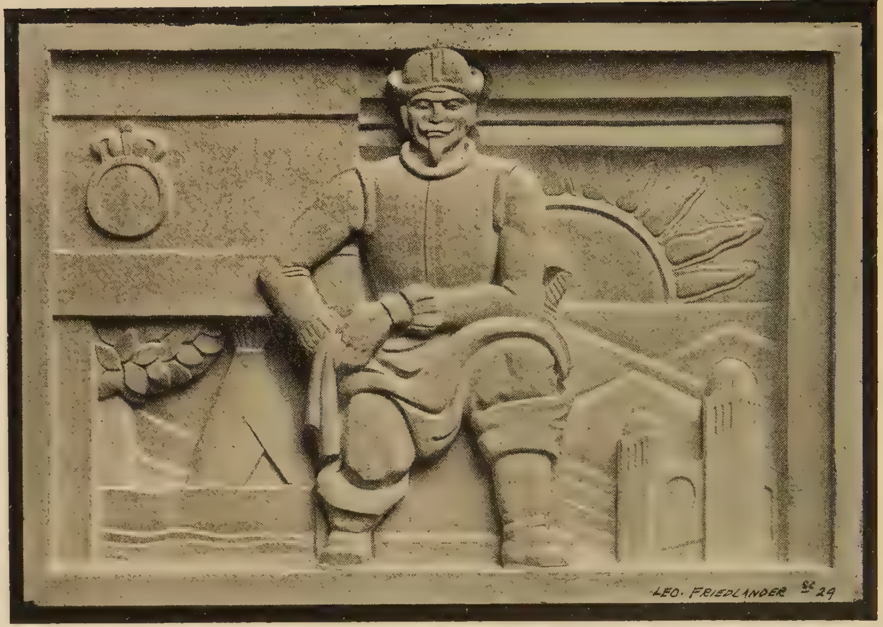


At left and right, the original drawings by Leo Friedlander, sculptor, for panels on the main façade of the Jefferson County Court House, Birmingham, Ala.; Holabird & Root, architects. Above, the plaster models of same

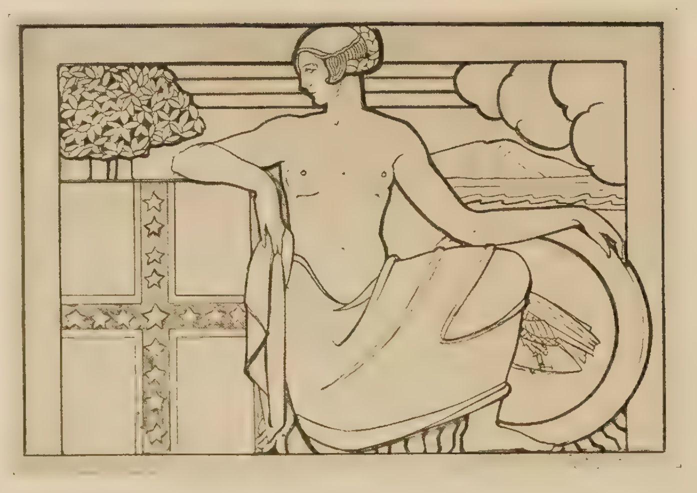




"Under Confederate Government"



"Spanish Dominance"



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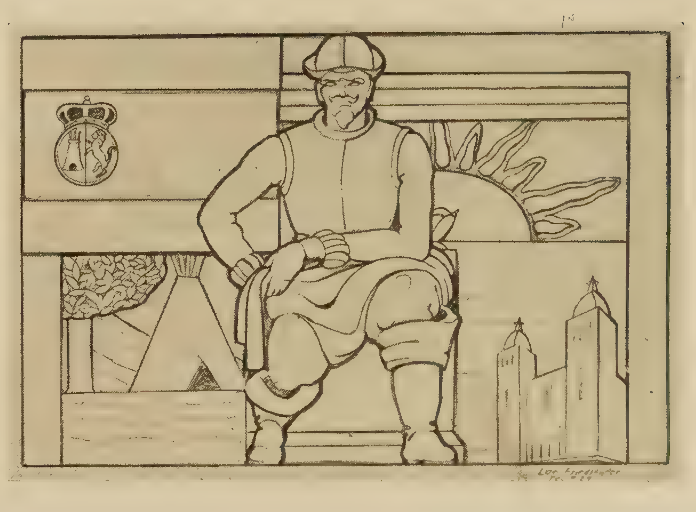

The Editor's Diary

Tuesday, June 9.—This has been one of our red-letter days—with its visit to Vaux le Vicomte near Melun. The chateau, now owned and dwelt in by M. Sommier, was designed and built by Le Vau and Le Brun for Fouquet, the infamous Superintendent of Finances under Louis XIV; its gardens designed by Le Nôtre. Legend has it that Louis XIV, on seeing Vaux le Vicomte, determined to outdo it, engaged Le Nôtre and later Le Vau, and set about building Versailles. Unquestionably he surpassed his model in size and cost, but in nothing else. Vaux le Vicomte, inhabited at the time of the Revolution by several women who had no political significance, remained undamaged. It came into the hands of M. Sommier's father in 1875, and has been maintained and restored with unerring taste and discrimination. While walking through its magnificent gardens—the main axis of which is three-quarters of a mile long—or being shown the Aubusson tapestries, Le Brun's paintings, the contemporary furniture and hangings, by our host, it was indeed difficult to realize that here is a man's home, a home in the year 1931, and not the palace of a King of France. Vaux le Vicomte, being a private chateau, is seldom seen by travellers; so far as I know the only illustrations available are in Theodore A. Cook's "Twenty-five Great Houses of France."

Wednesday, June 10.—Seizing the opportunity of a day free from any engagements other than those preparatory for the Quat'z Arts Ball, Louis Jallade, Walter Thomas, George Lovatt, Louis Walsh, Wharton Clay, and I chartered a motor car for a visit to Rambouillet and Chartres, and feasted our eyes for a few hours upon the most beautiful glass in the world. Once again we remarked upon the simplicity of its coloring—the background of that matchless *azur*, upon which the small figures, medallion-like but not so definitely circumscribed, are drawn largely in reds, yellows and orange. And again we noted the simple leading of thin cames—a frame for the glass rather than a medium of line drawing.

Back to Paris just in time to array ourselves in the paint and simple draperies of Greek *anciens* returning from Salamis, the prescribed event to be roughly commemorated in the Quat'z Arts Ball, and to foregather before an amused Parisian populace at Le Coupole for dinner. Afterwards by crowded taxis to La Porte de Versailles where this year's ball was held with all of the traditional precautions against the entrance of any but students of the Quartier and their properly accredited guests.

The Bal des Quat'z Arts, inaugurated in 1895, is a magnificent Bacchanalian event of which one does not attempt to write a description in words. In the cold, sober array of ink on paper its spirit vanishes and cannot be recaptured. It could never transpire elsewhere than in Paris; its esprit and unique elan could never be achieved without the flaming youth of the Quartier, roused to their most brilliant incandescence. Behind its traditional curtain it must remain, excepting in the ashen memory of those who have been privileged to regard once again their own youth in the Quat'z Arts' perennial white-hot flame.

Thursday, June 11.—Out to the Colonial Exposition once more, with Walter Thomas, for a more leisurely inspection of the Angkor Vat by daylight, and to examine more fully in detail the more interesting creations under thatched roofs representing Cameroun and Togo, African provinces under French mandate, in which, so far as an utter stranger could judge, the architects had achieved a particularly convincing expression of African naïveté in a matrix of sophisticated skill in design.

Friday, June 12.—A busy day for the gathering up of loose ends, shopping for gifts that should be not too banal, packing and labelling luggage. In the late afternoon we attended a reception in our honor at the Hotel de la Fondation S. de Rothschild, given by Le Ministre de l'Instruction Publique et des Beaux-Arts, and Le Sous Secrétaire d'État des Beaux-Arts. Ambassador and Mrs. Edge were there, the venerable patron Laloux, and a host of those who had helped to make of our pilgrimage to Paris an event never to be forgotten. Then back to our hotels to disperse in smaller groups for our last dinner and evening of the visit in Paris.

Saturday, June 13.—Early morning calls; last moment packing; frantic searching for taxis, which at 7 A.M. seem to be practically non-existent in Paris; distant scouting finally discovers one on its way home from Montparnasse, it is piled high with the luggage of two passengers, and off we go to the Gare Saint Lazaire. The boat train is open, luggage stored in the racks, with a half hour left to seek *petit dejeuner* of chocolate and croissons before we pull out, amid farewells from the more energetic of our Paris hosts, for Cherbourg. Almost before the train has gotten under way our special car resounds with the heavy breathing of its twenty-six pilgrims—the other members of the party having dispersed to Sweden, London, to faster ships, or to steal a few more days in Paris itself.

At Cherbourg we were lightered out to *The American Farmer* (rechristened *The American Sleeper* for the return voyage), passing the *Europa* and the *Berengaria* at anchor and, with our smaller number to load, leaving them behind in haughty disdain. Our triumph was short-lived, however, for in an hour or so they both bore down in our wake, gave us a hoarse blast of the whistle, and cut around us, to be seen no more, Walter Thomas, Frederick Murphy, George Idell, and Clarence Zantzinger waving their proud farewells to us from the *Europa's* upper deck.

Sunday, June 14.—Timidly and at long intervals the remnants of the pilgrims appear, coming up for air, only to return quickly to their bunks to gain a little more sleep against their huge overdrafts in the past ten days.

Monday, June 15.—Slowly but surely, under Ken Murchison's never-failing banter, the party comes back to a rational enjoyment of life, somewhat hampered by the pitching of our little shallop in the heavy seas rolling over our port quarter. The indefatigable Tony Sarg is busy once more making caricature portraits of those who have not previously sat before him in his studio corner of the so-called refreshment bar.

Tuesday, June 16.—The heavy seas have quieted down, the sleepers are fast catching up with their schedules, and the deck sports are in full swing, excepting when frequent showers drive us below to relive again the days and the nights that only Paris can offer.

Wednesday, June 17.—It is a curious thing, in a way, that in a group of men of like interests, thrown very closely together over a period of a month, there is so little shop talk. To-day, for the first time in the pilgrimage, a group spent an hour or so discussing the relation of the A. I. A. to the profession, individually and collectively; what the Institute should do; what it might do if it had a larger membership and greater means; what should or might be the attitude of such an organization toward the complex matter of proper fees. Possibly this belated discussion of professional matters is a sign that the trip is almost over.

Thursday, June 18.—To-night a special dinner marked one of the memorable high spots of the Paris pilgrimage, marred only by the absence of those members of the party who had hurried home on faster boats or else had lingered on in Paris or in travel elsewhere. The occasion included the presentation of a watch to Kenneth Murchison as a very slight evidence of our appreciation of his inspired leadership. Felicitous remarks were voiced by Tony Sarg, James Monroe Hewlett and Peter Grimm individually, and by the whole company, *viva voce*, to the accompaniment of special music by Harry Burt, reinforced by several members of the crew. After adjournment from the dining saloon to the so-called Social Hall and Refreshment Bar, the other members of the ship's passenger quota caught some of the infectious spirit of the occasion and turned it into a combination bridge, dance, or what-have-you, which lifted from the boat its somnolent *nom-de-voyage*.

Friday, June 19.—Finished reading "The Autobiography of an Idea," that curious combination of a naïve appraisal of Louis Sullivan by himself, and something of his philosophy of life and art, in which appears occasionally a flash of the genius that was in the man. I was surprised, however, to find these flashes so infrequent, and rather beclouded by Sullivan's liking for many words. His writing, in a way, is like his ornament, extremely involved and delicately intertwined.

Saturday, June 20.—As we near the end of our homeward journey, still smiled upon by summery skies and delightful weather, there is talk of making an attempt to crystallize the Paris pilgrimage idea into more lasting form. If the thing were worth doing once—and there is no doubt in the mind of any pilgrim as to that—would it not be a treasurable experience for those who come after us. Possibly the event might be a stated one to occur every three years, cementing more firmly the relationship between the Ecole and those to whom she has given a new idea of self-expression.

Sunday, June 21.—The day before landing. Shortly after lunch a funeral service was held upon the upper deck, marked by all the melancholy solemnity that could be temporarily assumed, aided by a large collection of silk hats and any other habiliments that might be mustered out of incongruous sportswear—for the corpse was all that remained of the John Barleycorn who had accompanied us back from Paris.

Monday, June 22.—In the delicate pearl gray morning mist we sailed up the harbor and watched the skyline of New York develop like an image on a photographic plate. Bill Van Alen was congratulated upon the fact that his Chrysler Building still seemed to be occupying its usual position, peeping out from behind the massive silhouette of the Empire State Building and the nearer Telephone Building.

A small reunion at The Architectural League for lunch, plentifully interspersed with "Do you remember when—?" and the belated regrets of those who did not go. New York seems quieter and not so crowded with bustling people, for some reason. Near-by the old Belmont is crumbling under the bars of the demolitionists, while a little farther uptown the vast plain of Metropolitan Square is spreading through the removal of long rows of brownstone fronts.

Wednesday, June 24.—Joined the new Committee on Current Work in its first luncheon meeting at The League, where were started many ambitious plans for a continuous round of events beginning in the early fall. The League this year promises to be more than ever the active centre of architectural life in New York.

Friday, June 26.—More and more frequently one hears a new version of the skyscraper's birth. Possibly it is too late even now to make an official record of those first important steps in the development of a building form new to the world. John W. Root is probably not materially off the track in saying:

"A gathering of forces spread across the country shortly after the Chicago fire of '71; the railroads spread in the West with Chicago as the centre of the web. The lessening of railroad expansion left a quantity of iron in the market which the architects and engineers began to absorb.

"The first steel sections were substituted by Carnegie Phipps for the iron members of the upper two stories of the Home Insurance Building in 1884, and in 1885 Holabird & Roche proceeded with the Tacoma Building. This structure and the Home Insurance Building were the direct parents of all later steel skyscrapers.

"During the eighties, there were many architects working at the problems of the tall building. Colonel William Le Baron Jenny, who had built bridges for Sherman on his ride to the sea, was architect of the Home Insurance Building."

* * *

Saturday, June 27.—Reports from the recent New England conference of the A. I. A. in New Haven tell of an interesting experiment which seems to have pointed the way to a new source of pleasure and experience for practising architects. The assembly visited the Sterling Memorial Library, recently completed by James Gamble Rogers, the Lawn Club, and also the school buildings at Avon Old Farms by Theodate Pope, holding a clinic upon these examples of contemporary architecture. One particular phase that came in for discussion in connection with the first named of these dealt with the relation of buildings such as this to the social life of the times. Are buildings of this great cost and magnificence fitting in our day of great need for a wider dissemination of the facilities and privileges it is intended to foster? On the other hand, where munificent donors exist, why should there not be magnificent buildings? Is it not possible that we need such relief from the staid and sometimes bare structures erected purely in the interests of utility? In any event, such meetings, with critical examination of contemporary work and a perfectly friendly discussion of their qualities, is a practice that should be of real benefit to the profession.

Wednesday, July 1.—It is amusing to find Sir Edwin Lutyens, writing in a recent number of English *Country Life*, calling himself a confirmed traditionalist, and regarding with a fine scorn some of the efforts of the younger men of today. He discusses some of London's new and modernistic buildings with a keen analytical scalpel. Here are some wise words:

"The classic tradition sets a standard. There are innumerable things that an educated humanist 'does not do,' just as there are things that a writer tries not to commit: platitudes, jingles, slipshod construction, journalese. It would be very easy to write if one invented one's own language. That is what I feel about the average modern building. It has been easy to design because there is, as yet, no grammar. The modern solutions are not proved. In the absence of a new standard of criticism one must judge modern architecture by the same standards as one judges the traditional. For we cannot get rid of the body of the tradition, murder it how we may. It is always with us.

"By tradition I do not mean the unthinking repetition of antique forms—the hanging of Roman togas on Victorian towel-horses. Tradition to me consists in our inherited sense of structural fitness, the evolution of rhythmic form by a synthesis of needs and materials, the avoidance of arbitrary faults, by the exercise of common sense coupled with sensibility. . . .

"These adventurous young men thrill me tremendously and all my sympathies are with them. But good architecture needs more than bright ideas, and by my traditional standards most modern buildings seem to me to lack style and cohesion, besides being unfriendly and crude."

Thursday, July 2.—Considerable time and argument have been used in recent months in the attempt to show that the Government has no business in the architectural profession. It is unfortunate that such an outburst should have had to make itself felt at a time when the profession outside really needed the business. It would have been very much more seemly if the matter could have been brought up as an abstract theory, of no benefit to any one in particular, and proven then and there. Very little has been heard on the other side of the question, excepting a few pertinent remarks in *The Federal Architect*, which says, "As of January 15th, 1931, there was on the boards of private architects $125,000,000 worth of work as against $43,000,000 in the Supervising Architect's Office." Those employed in the Supervising Architect's Office, Treasury, War and Navy Departments, and the Veterans Bureau, ask to be shown those Government buildings designed by private architects which are immeasurably superior to other Government buildings designed by Federal architects. If the data is available, let it be brought forth. According to *The Federal Architect*, "The ethics of the profession has certainly taken a jolt when the architects of the country on letterheads of their A. I. A. Chapters blacken without investigation the work of other architects' offices with the naïve and frank admission that it is for the purpose of getting architectural commissions for themselves."

Friday, July 3.—Reginald Johnson dropped in on his way from the Pacific Coast before sailing to-night for England. He is going over mainly to seek out some fine old panelling to use in a large country home that he is building at Montecito. Clients of the right sort have apparently not all disappeared from the earth.

Saturday, July 4.—There is a definite trend toward a fuller recognition of architects as cultural leaders in this generation. The universities are conferring degrees upon them, one of the most recent being H. Van Buren Magonigle, of New York City, who has been made Doctor of Architecture, a degree that was conferred for the first time in this country at the last commencement of the University of Nebraska. Magonigle is cited as "a scholar, teacher, author, architect, painter, and sculptor of national reputation." Among architects recently given the honorary degree of Doctor of Philosophy are Charles Butler, Harvey Wiley Corbett, Kenneth M. Murchison, and Benjamin Wistar Morris.

Monday, July 6.—News of additional discoveries in Yucatan comes from Doctor Herbert J. Spinden, the Brooklyn Museum's curator of ethnology. Near Yaxche he found five ruined buildings on a group of small hills, the largest one probably a temple; also a two-story structure containing fifteen or twenty chambers. Another group was found about twelve miles from Dzitbalche—a nine-chambered structure. Near the ruined pyramid of Tajin Doctor Spinden found two hand-ball courts, one thirty-four by two hundred feet, the other seventeen and a half by eighty-seven feet.

Tuesday, July 7.—Spent an hour or two with Andrew J. Thomas and Thomas C. Stapleton of his office, examining the work that has been done in Mr. Rockefeller's residential development at Forest Hill, just outside of Cleveland. Here is one of those opportunities that come once in a lifetime to build what is practically a self-contained community—houses, stores, banks, churches, apartments, and an inn. There was no speculative factor involved, so that the buildings could be thoroughly studied and built of enduring materials. We shall have the pleasure of showing this large problem in detail in these pages shortly.

Friday, July 10.—Pittsburgh is to have a new garden-home community to provide for three hundred families of moderate income. The Buhl Foundation, established by Henry Buhl, Jr., Pittsburgh department-store owner, who died in 1927, provided $13,000,000 for "such religious, charitable, educational and public uses as the managers shall direct." Having granted a number of comparatively small sums to various worthy objects, the Foundation now undertakes the building of a community, the houses of which will be rented rather than sold, in order to maintain the character of the neighborhood. The Foundation takes advantage of the present period of low-cost building to make its capital investment, which is to yield a limited rate, the rents of the houses being fixed by their actual cost. When so many community projects are forging ahead with individual detached houses, the Buhl Foundation's scheme of units of from two to eight houses, with soundproof walls between, is an interesting phase of the work. The houses will be of five and six rooms, some of them having individual garages, others served by group garages.

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Saturday, July 11.—The electrical savants have been talking for some time about the possibilities of the photoelectric cell. So far as we know, the first practical use in automatic door opening is in a series of doors in a restaurant at Savin Rock, Conn. Waitresses passing to and from the kitchen interrupt a beam of light as they approach the swinging doors, thus causing a compressed-air device to open the door, which closes immediately afterward. This door-opening mechanism has been worked out by the General Electric Company and the Stanley Works.

Monday, July 13.—The Illinois Engineering Experiment Station has been testing the efficiency of radiators, enclosed and unenclosed, painted, bronzed, or left bare. Color of paint seems to have no appreciable effect, the amount of heat radiated being determined rather by the contour and nature of the surface. Oil paints give practically the same or slightly greater heat transmission than unpainted surfaces in the tubular radiator, although the very rusty surface of the unpainted drum proves to be about seven per cent better than the paints. Metallic bronze paints reduced the efficiency of heat transmission from the drums eighteen per cent; in the case of the radiators, where the re-entrant surfaces interfered with the effectiveness of radiation, the bronze paints reduced radiation by from 7.4 to 9.2 per cent.

Tuesday, July 14.—This being Bastille Day, it seemed eminently fitting that the Paris Voyageurs should reconvene for a minor celebration. The gathering was held at Tony Sarg's studio, with Captain Petersen, of *The American Banker*, and Hubert Ripley and Edward Prichard coming away down from Boston to join the thirty or forty of the New York contingent in seeing a showing of the motion pictures taken by Harry Burt. The pictures were good, but Kenneth Murchison's running comment upon them was better still. The Architectural League opening of the season, Thursday night, October 8th, will see a repetition of the showing for the benefit of those who did not go.

Wednesday, July 15.—Up to New Haven and with P. E. Isbell of James Gamble Rogers's office, to inspect the Sterling Memorial Library. There has been much talk of this monumental pile, some of it in connection with the recent clinic held by the New England Chapter, A. I. A., wherein the question has arisen whether such elaboration of craftsmanship has a logical place in our present social framework. There has also been voiced the question whether, in a university library of to-day, it is fitting to use the forms of a past era. Neither of these criticisms stands long before the compelling magnificence of the building itself. And one is impressed at once by the fact that here is no case of pouring new wine into old bottles, but rather the expression of a new problem in terms of an accepted and tried vocabulary. This vocabulary has never been allowed to cramp the working out of practical present-day requirements. The result is a modern library, not a problem in archæology. The building will soon speak for itself in these pages.

CONTACTS

DEVOTED TO A BETTER UNDERSTANDING OF THE BUSINESS SIDE OF ARCHITECTURE AND ITS RELATION TO THE INDUSTRIES

Why the Lath Marks on a Plaster Wall?

By Dr. W. J. Hooper
Professor of Physics, Battle Creek College

DID you ever think what a curious thing is going on when a little particle of dust, sailing about in the atmosphere, comes up close to a wall and then, in a somewhat mystical manner, selects its reserved seat, as it were, and settles quietly down to rest in such a manner that it, together with millions of similar little particles, outlines in dust the gaunt timbers and lath behind the wall?

Since primitive man began to erect his dwelling with sticks which were plastered with mud, these curious dust deposits, called "lath marks," must have been in evidence. Undoubtedly many an observing eye throughout these intervening centuries has been focussed on this familiar phenomenon while the musing thought of the individual has sought to find a satisfying explanation.

Upon investigation, one is somewhat amazed to find that a treatment of the wall surface by waxing, painting, enamelling, and papering of any kind does not seem in even the slightest degree to affect the peculiar affinity of the dust particles for certain regions on the wall, particularly those places over the spaces between the lath. Examine the deposit of dust and you will find that it can be readily wiped off. It is purely an outside surface effect.

Can the influence which seemingly reaches through the wall to direct the path of the settling dust particles be gravitational, electrical, radioactive, visible or invisible light rays, chemical, thermal, or mechanical? Such was precisely the nature of the question which was asked of us prior to our investigation. We were confronted with many theories but found no actual experimental proof of any one of them having ever been carried out. These theories were offered by layman and scientist alike. In character they embraced in some form or other all the influences just mentioned.

Perhaps the most popular belief is that the plaster is sufficiently porous to produce a sort of filter-like action on the dust particles as air passes through the wall. A circular of the Bureau of Standards suggests that the cause is concerned with the condensation of water vapor on the walls, while others have believed it to be a thermal, electrical, or chemical influence, or an invisible radioactive radiation or other hidden and mysterious cause.

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In attacking this problem our first task was to find some way of artificially producing "lath marks" within a short time in order that their cause might be readily studied. In the ordinary home it usually requires anywhere from a few months to several years for them to make a prominent appearance. We commenced our attack by building a portable section of a wood lath and plaster wall. The section was about five feet long and two feet wide, the lath being nailed to the edges of two parallel supporting boards on the sides, and the table top thus formed a considerable air space beneath the wall, corresponding to the inner wall of a dwelling. The upper surface of the wall was covered with wall-paper. In order to produce a dusty atmosphere next to the wall-paper, a smoke chamber was built which consisted of an open sheet-metal box which was placed over a smoking kerosene lamp on the wall section.

By means of this simple apparatus it was found possible to deposit a layer of soot on the wall-paper in a very short time. These deposits of soot were, however, perfectly uniform and there was no evidence of "lath marks" nor was there anything to indicate how they might be produced.

It was recalled by the writer, however, that in one instance where "lath marks" had been observed in a dwelling a draft of air was found coming out from a small hole in the wall. Could this draft possibly be connected with the cause? Several experiments were tried. A draft of air was caused to pass underneath the experimental wall section by connecting the air space beneath the plaster to a chimney in the laboratory. The smoke chamber was now operated over the wall-paper, but there was still no evidence of "lath marks."

The atmospheric conditions in the laboratory were now changed. The windows were opened wide and a cold draft of winter air permitted to enter the room. The draft of air underneath the plastered section was thus made quite cool. The smoke chamber was again operated over the wall-paper and for the first time we were successful in producing "lath marks."

A large number of consecutive experiments were now performed to trace the exact cause of "lath marks." Only a few of the most important ones will be mentioned. It was found that a draft of air passing over plaster will electrify it. In order to test whether the cause was electrical or not a sheet of aluminum foil was cemented to the wall surface underneath the wall-paper. This did not, however, prevent "lath marks" from appearing on the wall-paper when a cold draft of air was circulating beneath the lath and plaster.

A sheet of ordinary window glass with metal foil cemented to one side of it was embedded in the surface of the plastered wall section which was then papered, but "lath marks" were readily obtained even here.

What might be the appearance of the soot deposit if the draft of air beneath the plaster were heated instead of cooled? We decided to find out and accordingly an electric heating-coil was so placed as to heat the air at the intake of the draft beneath the wall section. After operating the smoke chamber over a newly papered surface we were now surprised to find "lath marks" indeed, but of a different sort. The soot was deposited in streaks directly over the laths instead of between them as is ordinarily observed on the walls of dwellings.

This change of position of the "lath marks" is most interesting and furnishes the finger pointing to the real cause.

First, it became clearly evident that the popular belief that porosity of the plaster has something to do with "lath marks" was obviously exploded, when these marks were obtained on a wall made of metal, glass, plaster, and wood.

Clearly a thermal influence was at work. By means of an electrical thermometer it was found that where "lath marks" were obtained a difference of temperature could be measured between the region where the soot particles chose to deposit themselves and the surrounding regions. Greater deposition of dust or soot was always obtained on the cooler regions of the wall, though the difference in temperature was sometimes only a fraction of a degree. One would naturally expect these temperature differences to exist when it is recalled that plaster is a much better conductor of heat than wood. Thus heat, in passing through a wall, takes the easier path and travels largely via the plaster between the lath rather than through the wood lath.

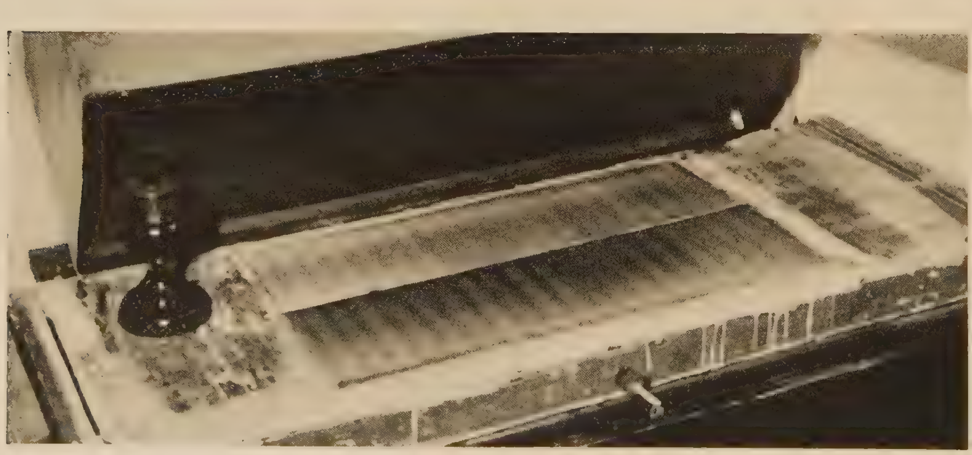
Between 1870 and 1885 the eminent British physicists, Dr. Tyndall, Lord Rayleigh, Sir Oliver Lodge, and John Aitken, were performing some very fundamental experiments with dust and especially with regard to hot and cold bodies. They had discovered that a hot body seemingly repels dust, whereas dust will deposit itself freely on a cold body. Thus Sir Oliver Lodge writes in the January 22, 1885, issue of *Nature:* "Whenever the air is warmer than bodies it deposits its dust and smoke upon them; whenever bodies are warmer than the air they keep the dust off, except when the weight of some of the larger particles is sufficient to overcome the bombardment; a thing which is very likely to happen on a horizontal and slightly warm surface. So we learn that the things in a room warmed by radiation (sunlight and open fire), because they are warmer than the air in the room, do not tend to get very dusty. But in a room warmed by hot piping or stoves, things are liable to get very dusty because the air is warmer than they are."

The mystery surrounding the origin of "lath marks" now appears for the first time to be experimentally clarified. The very slight temperature differences which were found to exist on the surface of our experimental wall section when "lath marks" were formed are thus found to account for the peculiar behavior of the dust particles. What is surprising in this discovery is to find that these obscure and feeble temperature differences are sufficiently great to give rise to such pronounced effects on the movement of dust particles as we have in the production of "lath marks." Although this cause had been suggested before, as were many other possible causes, we now have the question cleared up.

A non-technical description of what is going on when dust particles produce "lath marks" might be given by likening the process to a game of volley ball. The air molecules are the players and are constantly striking the suspended dust particles which are driven about in the atmosphere as a result of this bombardment.

Next to a relatively warm wall surface the players are very active and play more energetically than the slow sluggish players next to the cooler surfaces. One would naturally expect the more alert players to be the most efficient in keeping the ball off of their court, and so they are. In this molecular game the volley ball dust particles are most frequently driven to the wall because of the ineffectual play of the colder and more inactive team. Sir Oliver Lodge writes: "We may say roughly that there is a molecular bombardment from all warm surfaces by means of which small suspended bodies get driven outwards and kept away from the surface. It is a sort of differential bombardment of the gas molecules on the two faces of a dust particle. Near cold surfaces the bombardment is very feeble and if they are cold enough it appears to act towards the body, driving the dust inward."

The question has been asked, "How can these 'lath marks' be effectively eliminated?" The answer is simply this: To eliminate "lath marks" the temperature differences on the surface of the wall must be reduced to a negligible value. Thermal insulation in the inner wall space naturally reduces the value of these temperature differences.



Here is the apparatus used in Dr. Hooper's tests—a section of plastered wall and a metal box in which soot could rapidly be produced. The two sections of plaster shown here were separated by a partition underneath, separating cold air and warm air currents. The lath marks in the former are between the laths; in the latter, over the laths

ARCHITECTURE'S PORTFOLIO OF

URNS

AND FINIALS OF URN FORM

THE FIFTY-NINTH IN A SERIES OF COLLECTIONS OF PHOTOGRAPHS ILLUSTRATING VARIOUS MINOR ARCHITECTURAL DETAILS

Forthcoming Portfolios will be devoted to the following subjects: Window Grilles (October), China Cupboards (November), Parapets (December), Concealed Radiators (January), Interior Clocks (February), and Outside Stairways (March). Photographs showing interesting examples under any of these headings will be welcomed by the Editor, though it should be noted that these respective issues are made up a month in advance of publication dates.

Subjects of Previous Portfolios

1926–27

- DORMER WINDOWS
- SHUTTERS AND BLINDS
- ENGLISH PANELLING
- GEORGIAN STAIRWAYS
- STONE MASONRY TEXTURES
- ENGLISH CHIMNEYS
- FANLIGHTS AND OVERDOORS
- TEXTURES OF BRICKWORK
- IRON RAILINGS
- DOOR HARDWARE
- PALLADIAN MOTIVES
- GABLE ENDS
- COLONIAL TOP-RAILINGS
- CIRCULAR AND OVAL WINDOWS

1928

- BUILT-IN BOOKCASES
- CHIMNEY TOPS
- DOOR HOODS
- BAY WINDOWS
- CUPOLAS
- GARDEN GATES
- STAIR ENDS
- BALCONIES
- GARDEN WALLS
- ARCADES
- PLASTER CEILINGS
- CORNICES OF WOOD

1929

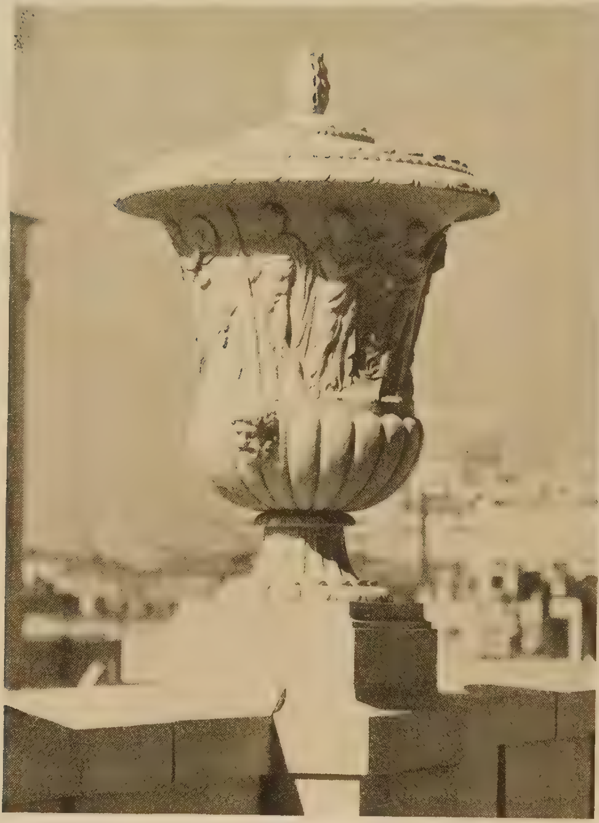
- DOORWAY LIGHTING
- ENGLISH FIREPLACES
- GATE-POST TOPS
- GARDEN STEPS
- RAIN LEADER HEADS
- GARDEN POOLS
- QUOINS
- INTERIOR PAVING
- BELT COURSES
- KEYSTONES
- AIDS TO FENESTRATION
- BALUSTRADES

1930

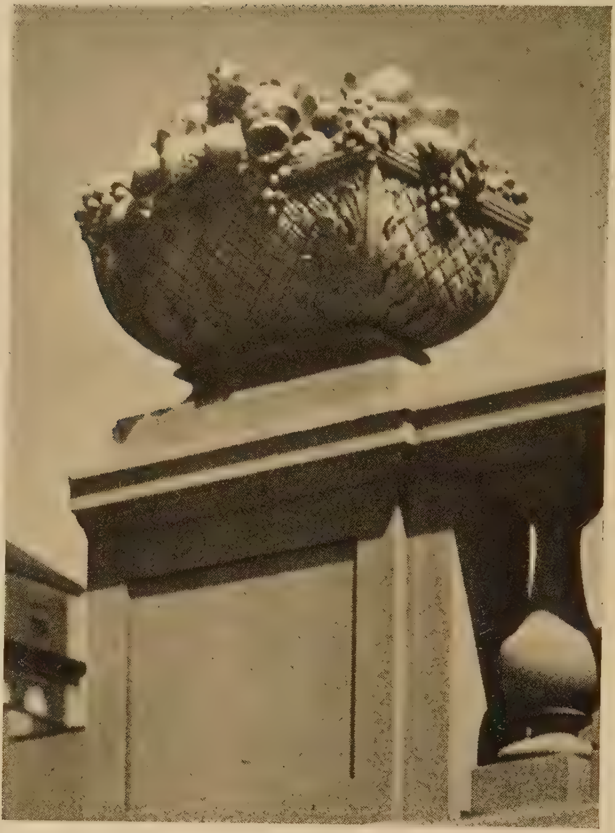
- SPANDRELS
- CHANCEL FURNITURE
- BUSINESS BUILDING ENTRANCES
- GARDEN SHELTERS
- ELEVATOR DOORS
- ENTRANCE PORCHES
- PATIOS
- TREILLAGE
- FLAGPOLE HOLDERS
- CASEMENT WINDOWS
- FENCES OF WOOD
- GOTHIC DOORWAYS

1931

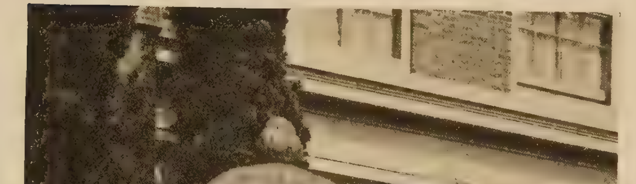
- BANKING-ROOM CHECK DESKS
- SECOND-STORY PORCHES
- TOWER CLOCKS
- ALTARS
- GARAGE DOORS
- MAIL-CHUTE BOXES
- WEATHER-VANES
- BANK ENTRANCES

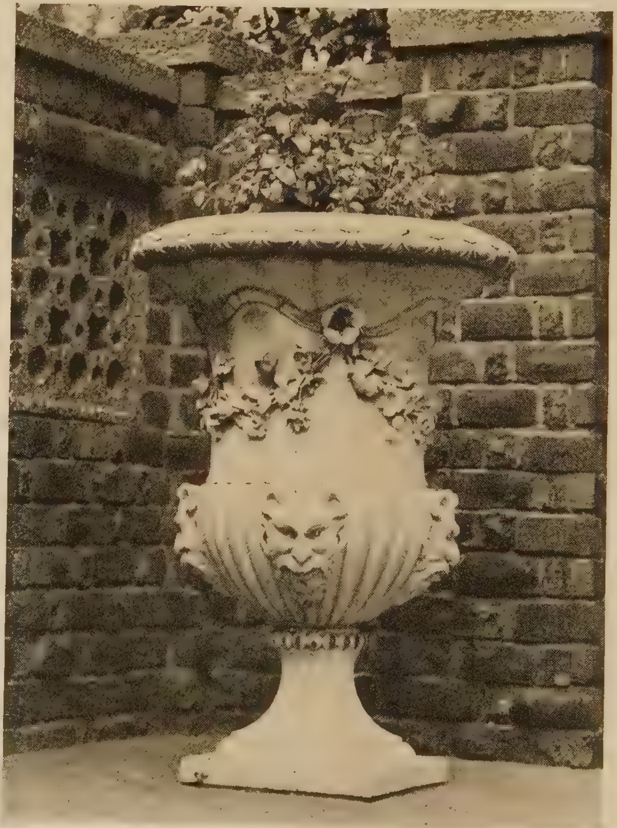


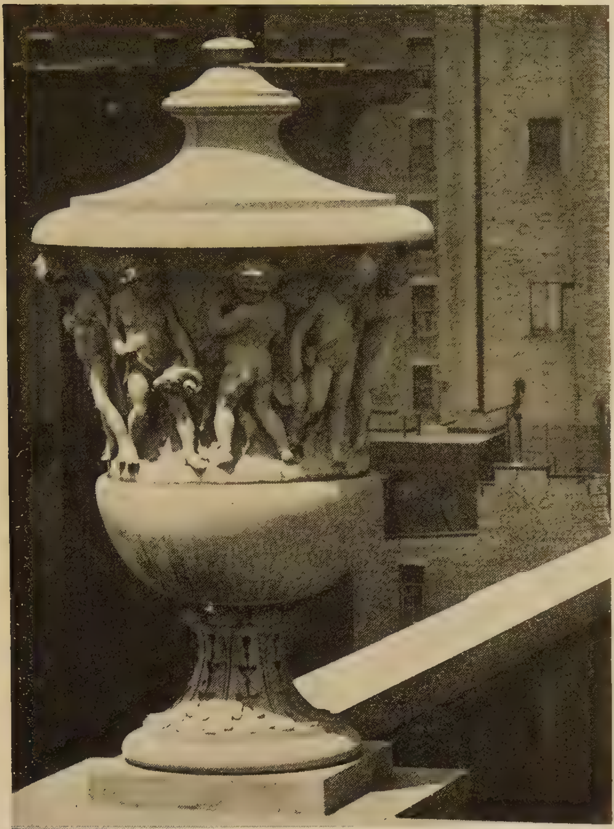
Office of John Russell Pope



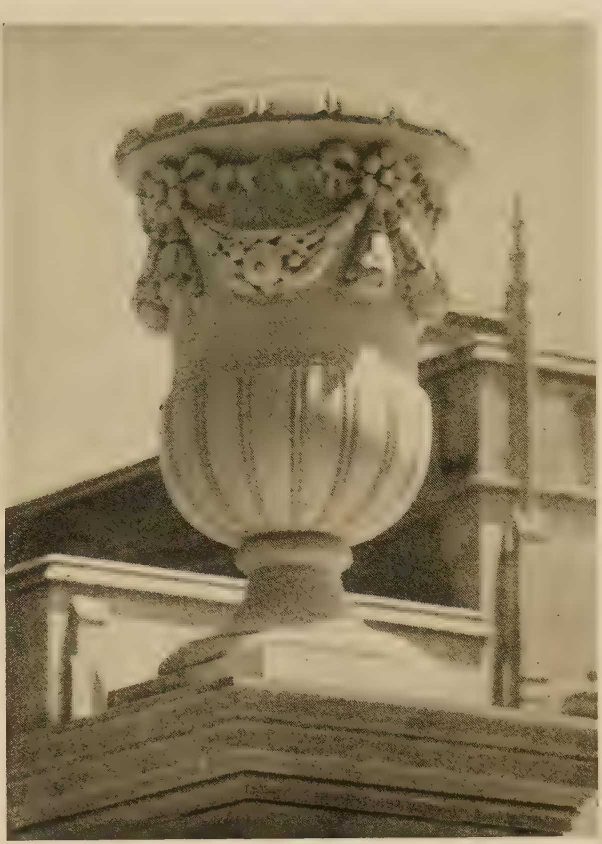
Grosvenor Atterbury





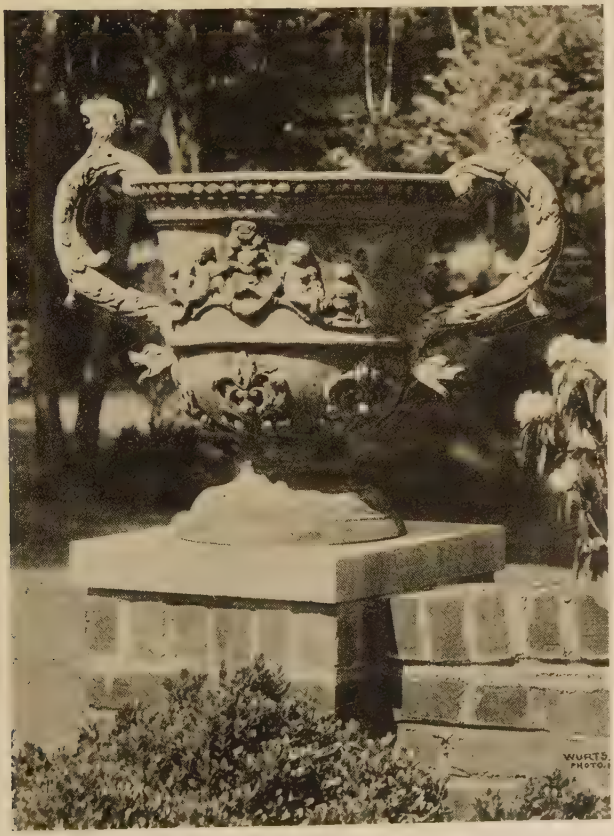


Warren & Wetmore



Price & Walton

Delano & Aldrich



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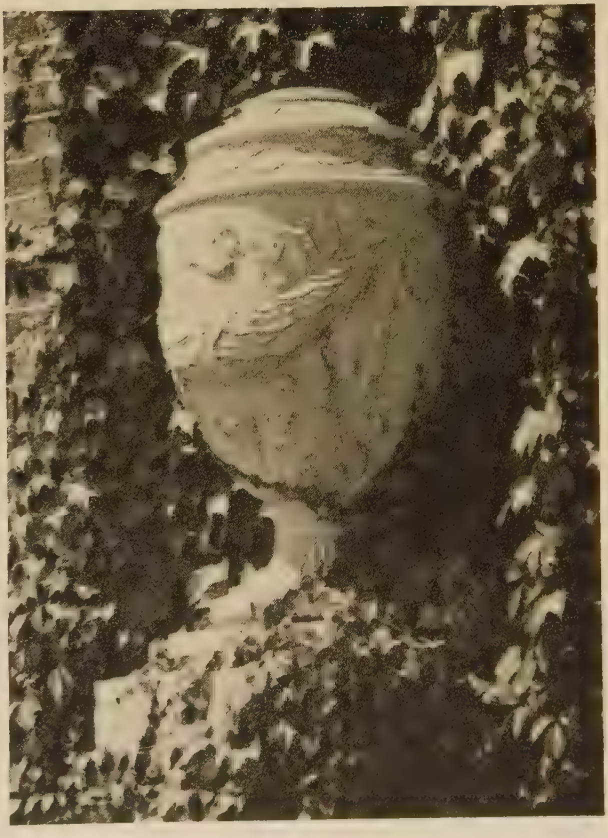
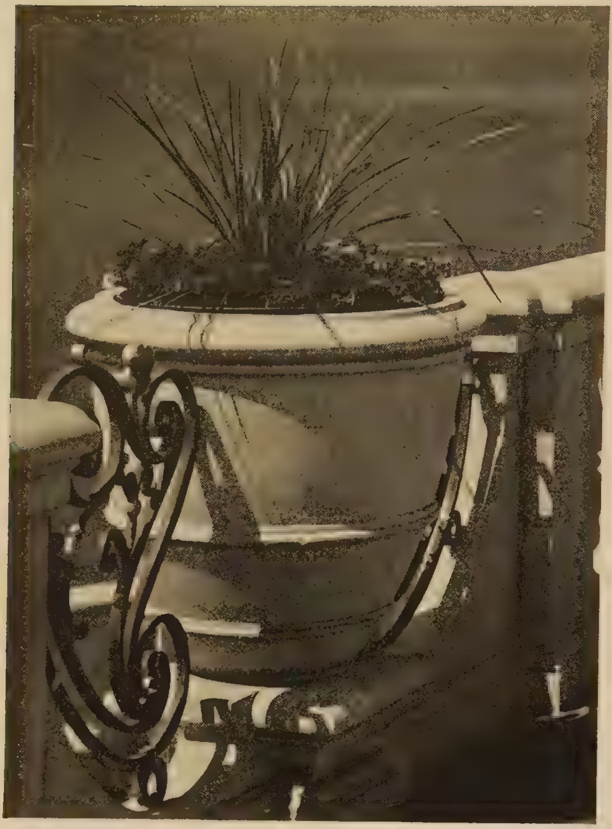
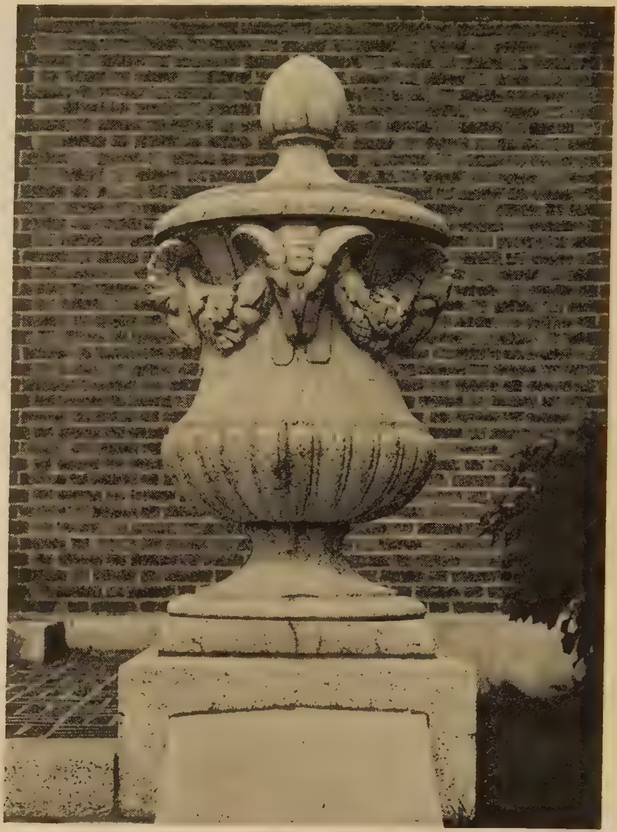


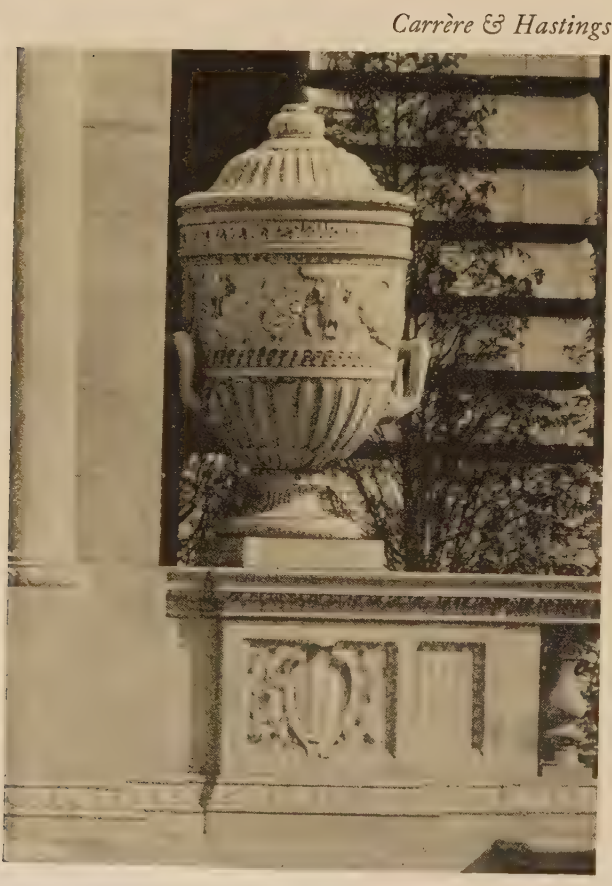


Kenneth MacDonald, Jr.

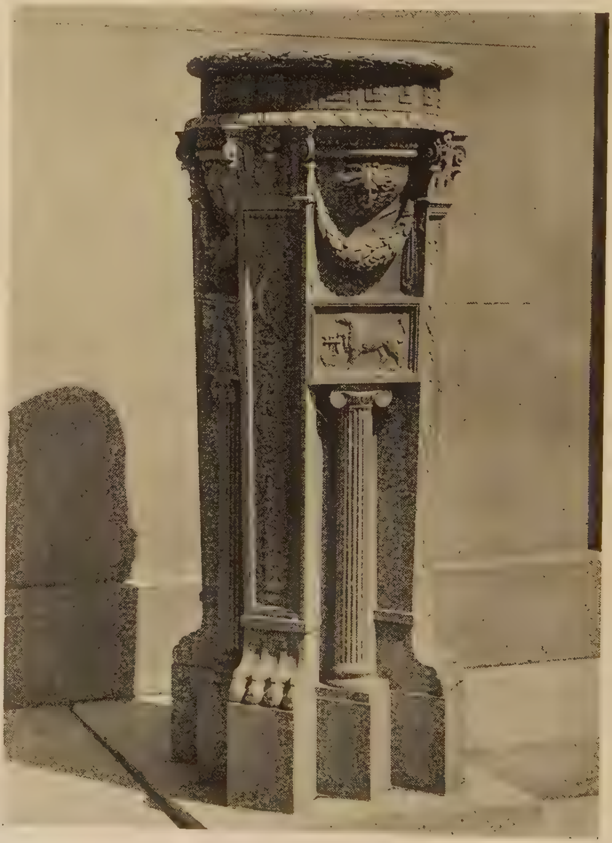


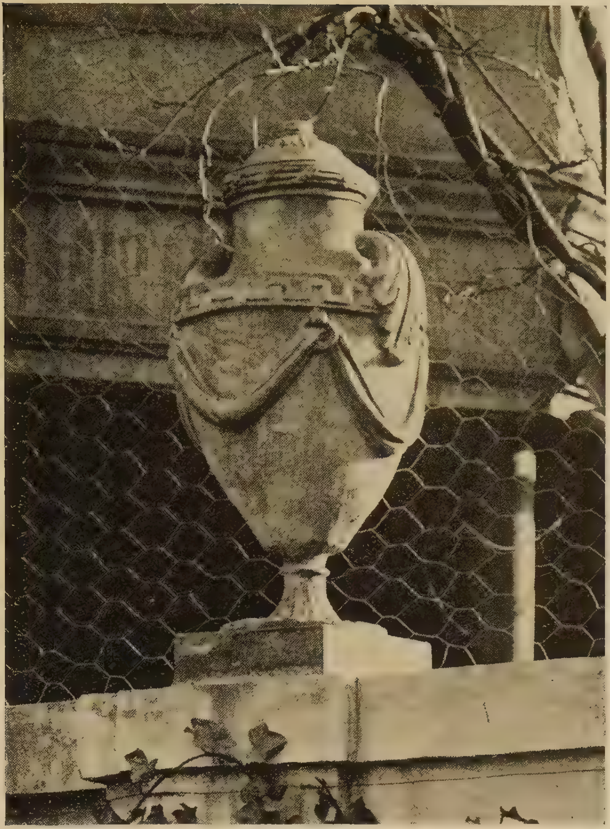
Jens Frederick Larson

Carrère & Hastings

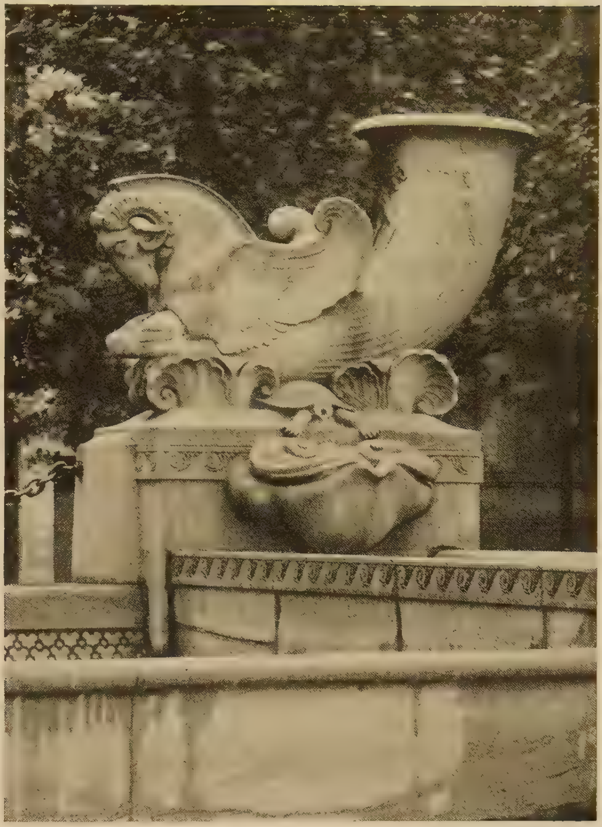


Office of John Russell Pope



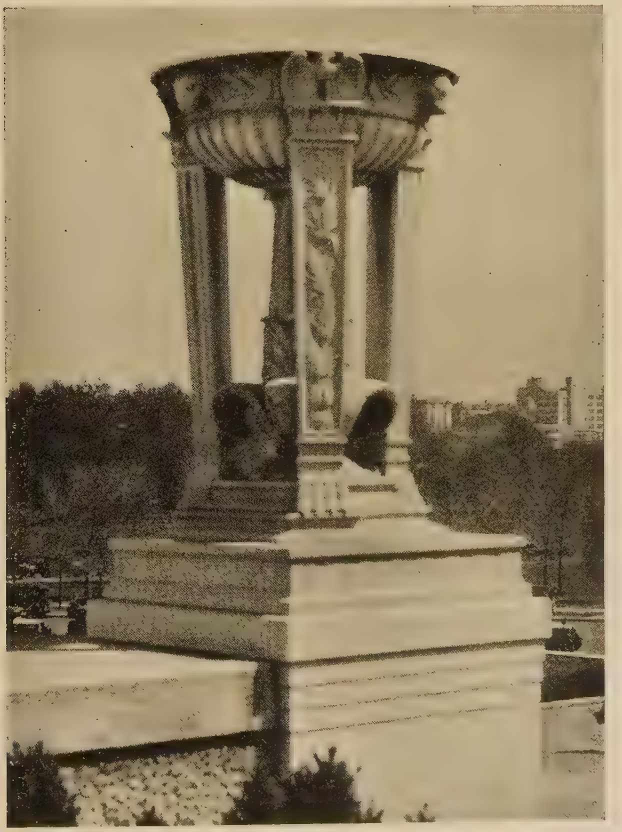


Frederick C. Sterner

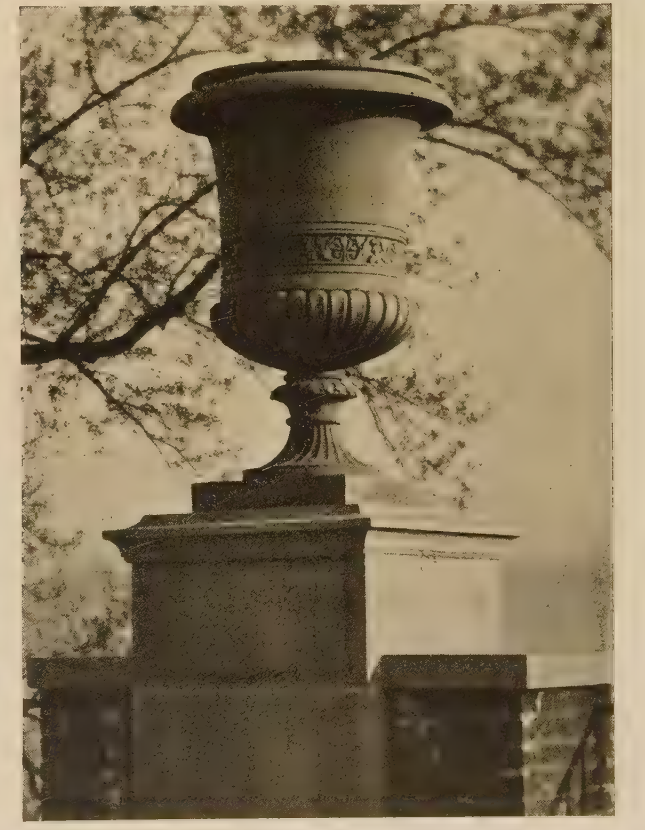


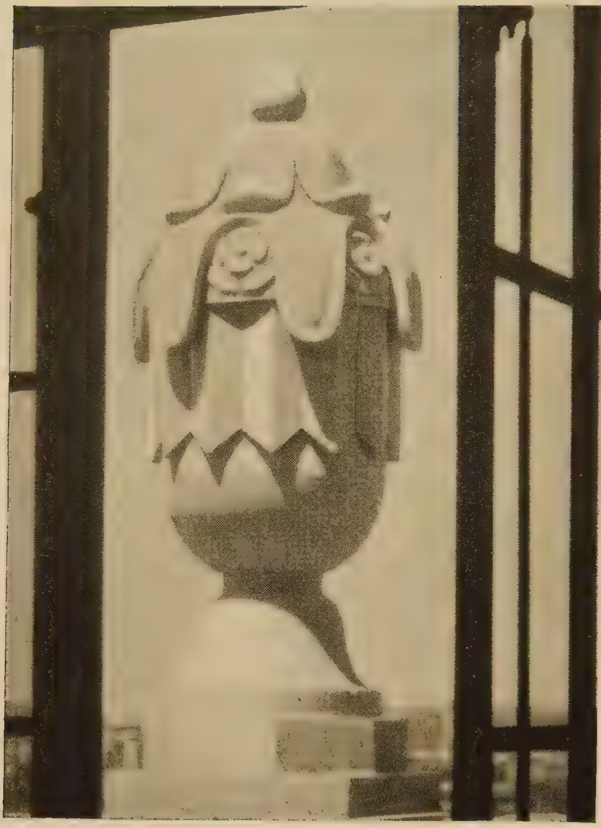
Carrère & Hastings

Henry Bacon

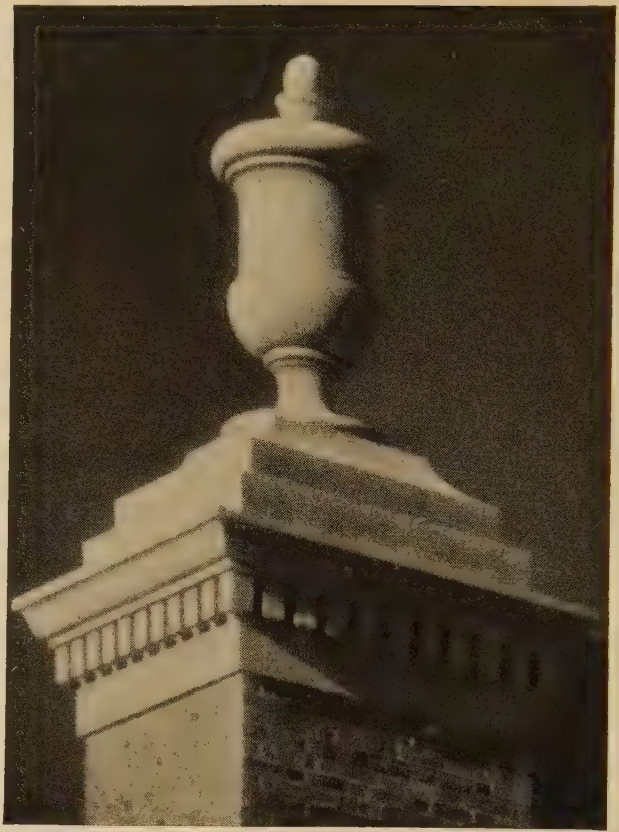


Davis, Dunlap & Barney



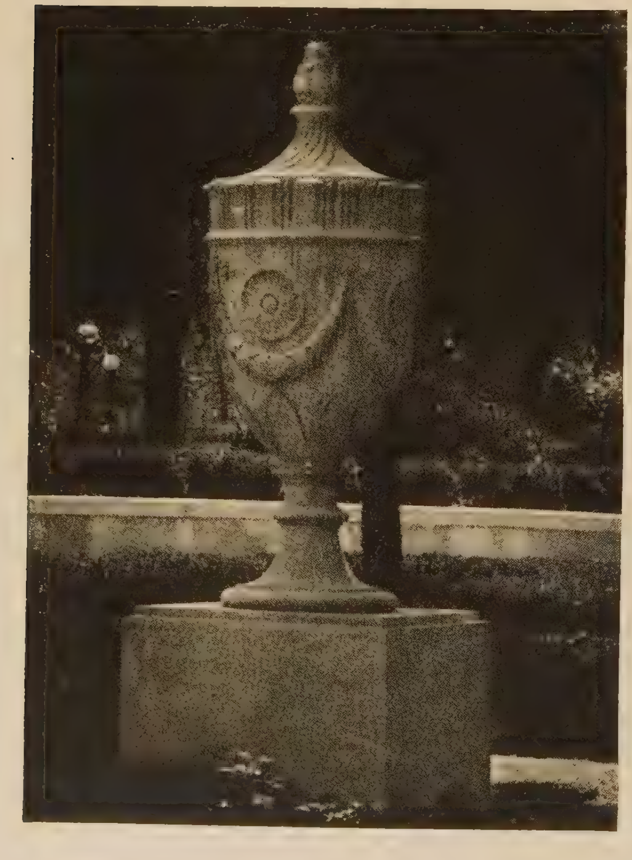


Hewitt & Brown

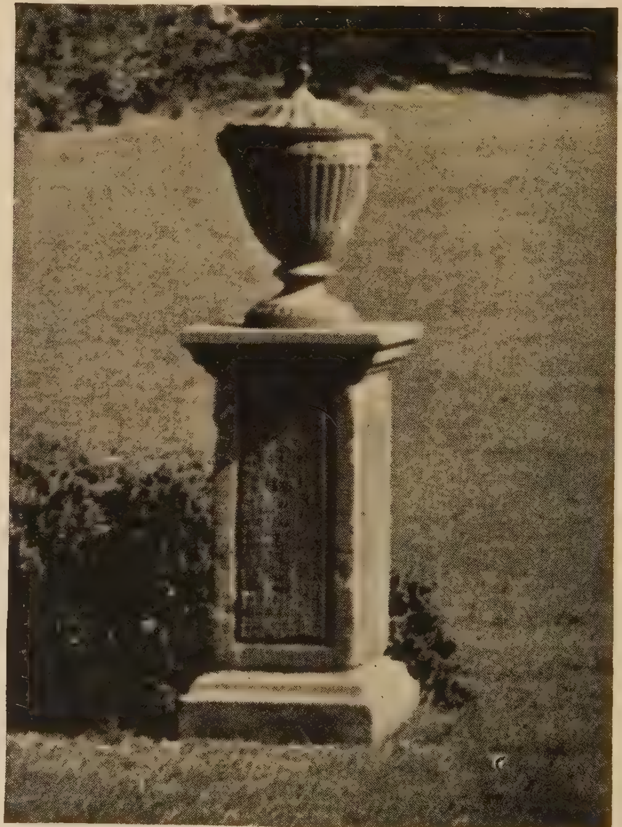


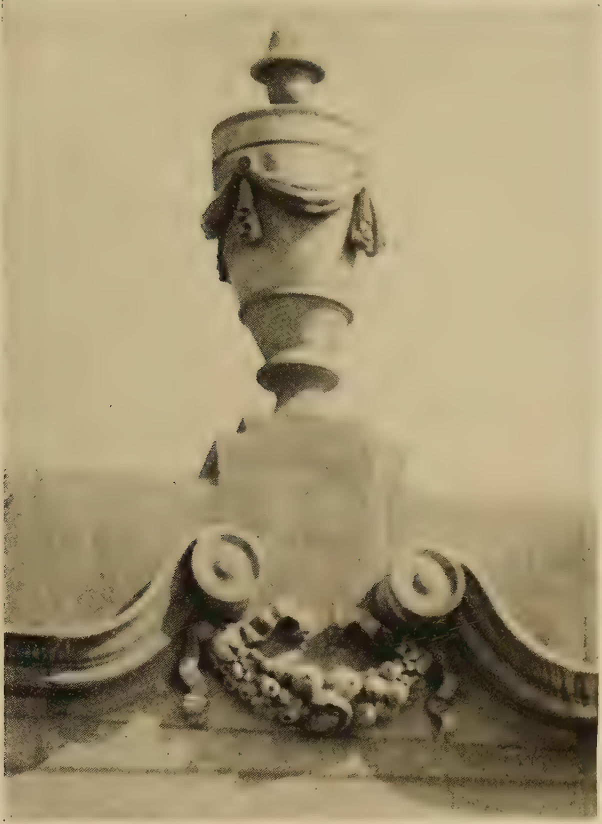
John W. Cross

Office of John Russell Pope

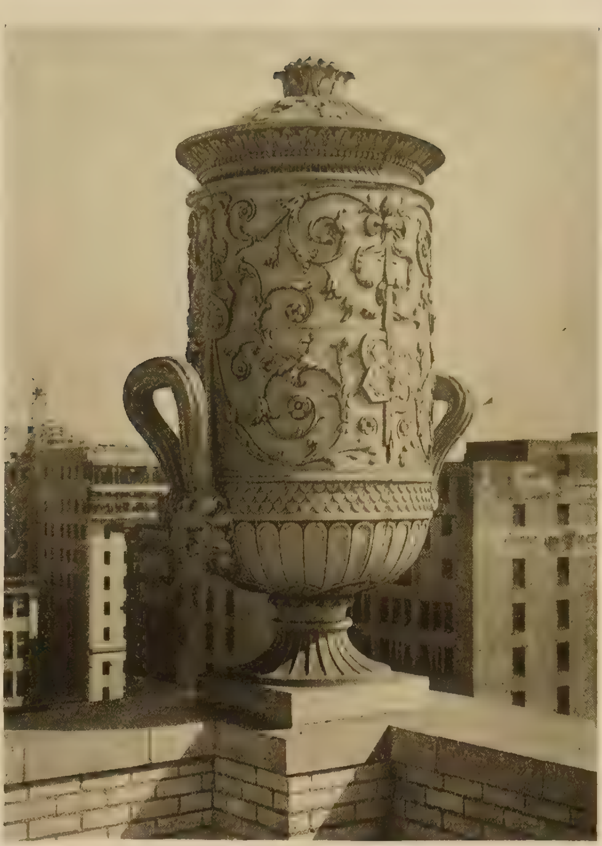


Bottomley, Wagner & White



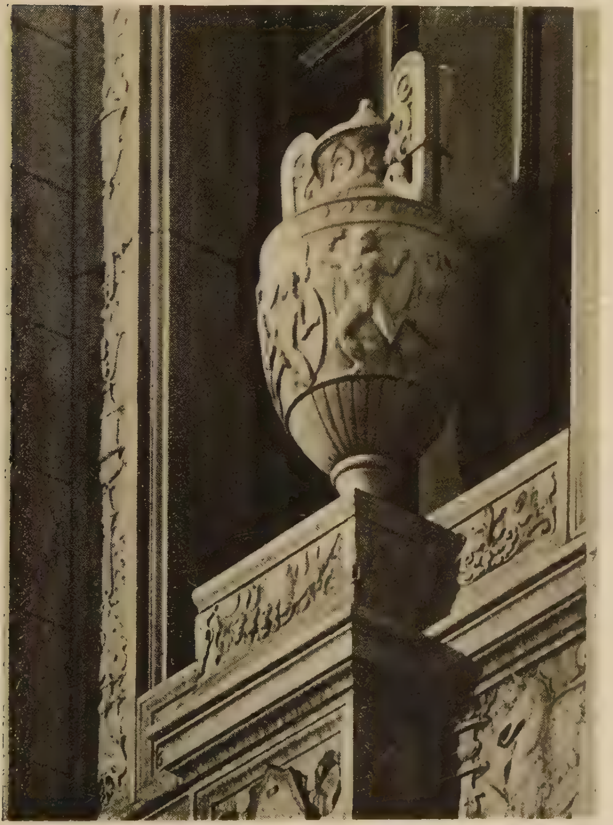


Bagg & Newkirk

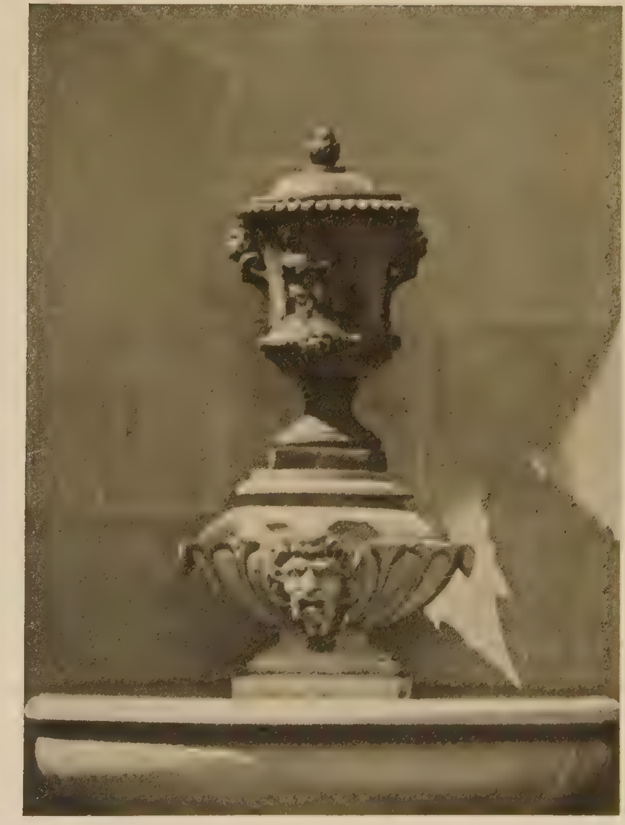


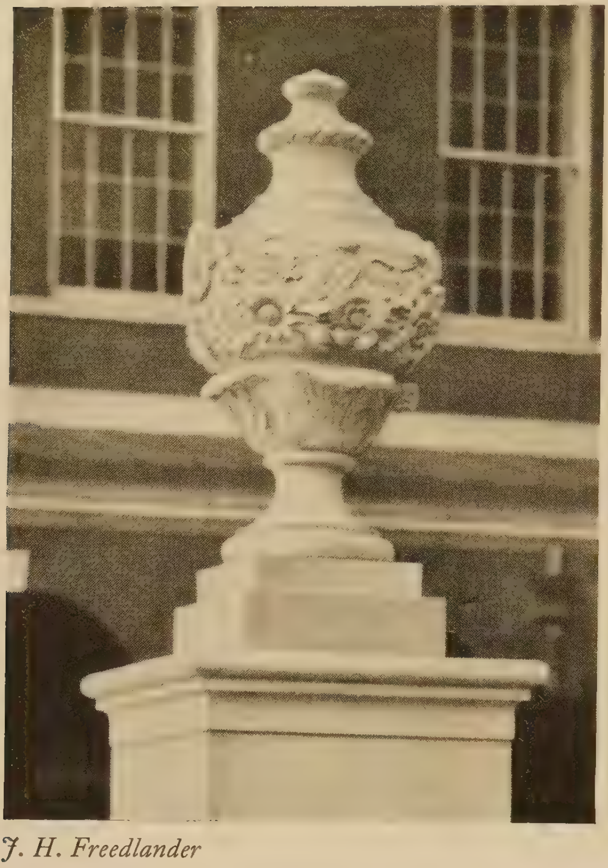
Schultze & Weaver

Cass Gilbert

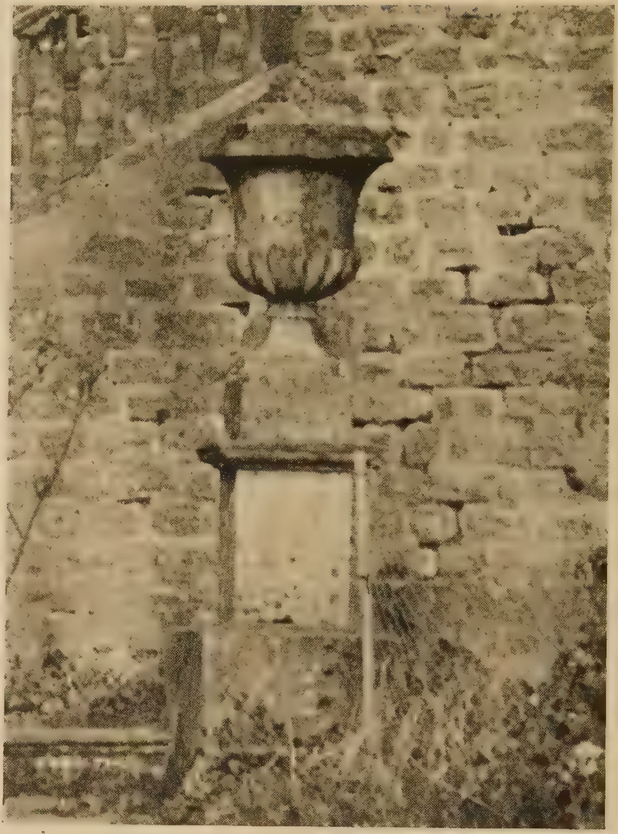


Office of John Russell Pope



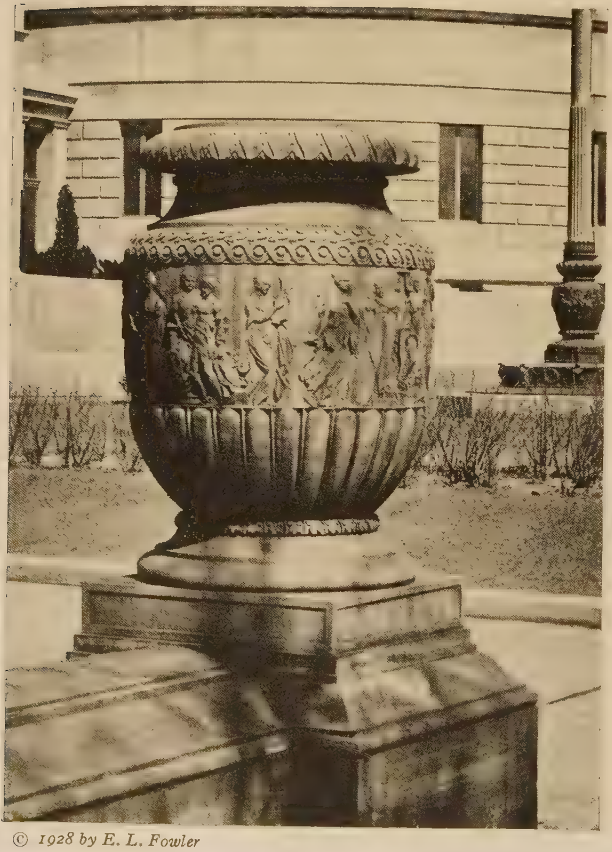


J. H. Freedlander



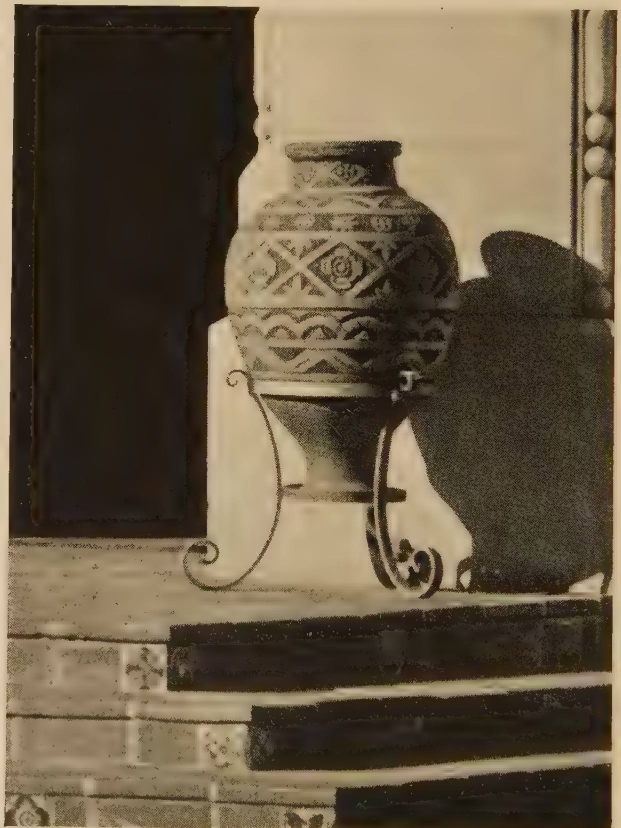
From a château garden in Picardy

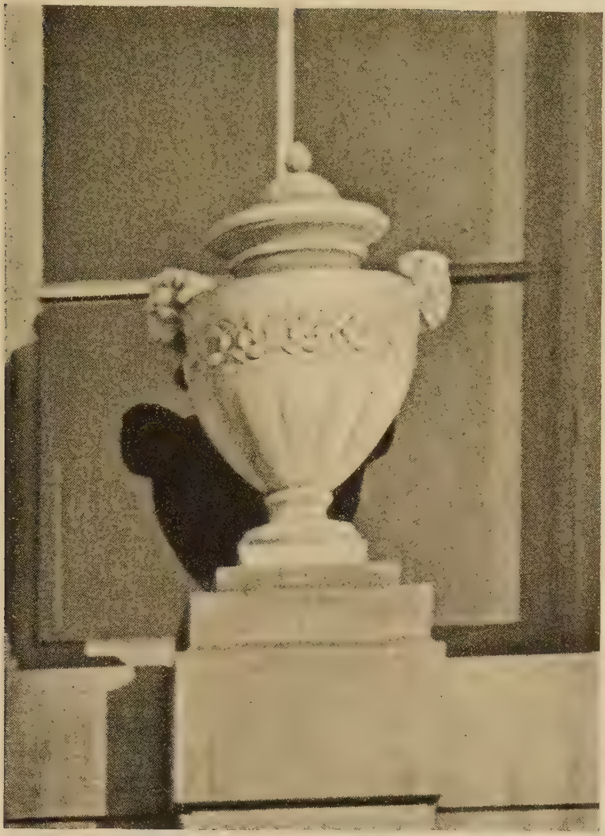
Egerton Swartwout



© *1928 by E. L. Fowler*

W. P. McAllister





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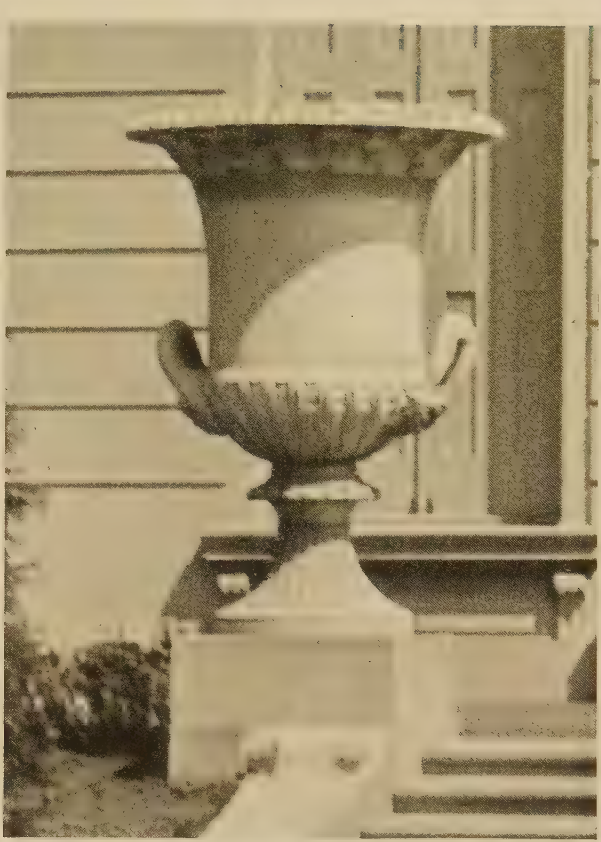
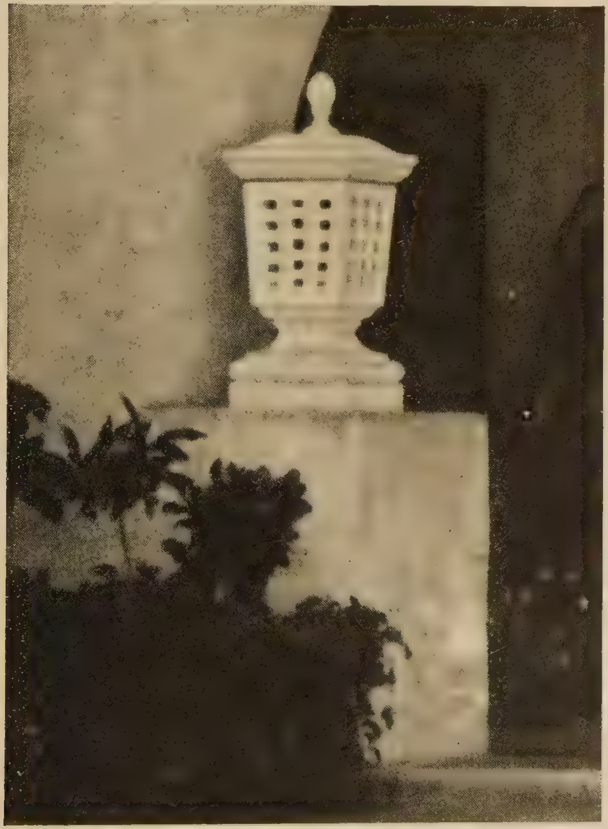
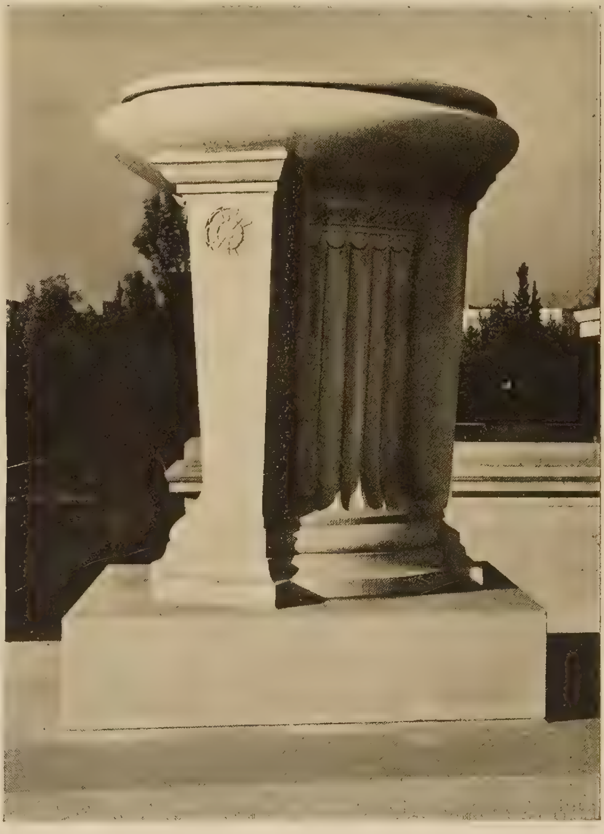


Thomas Hastings

Kiehnel & Elliott



Office of John Russell Pope

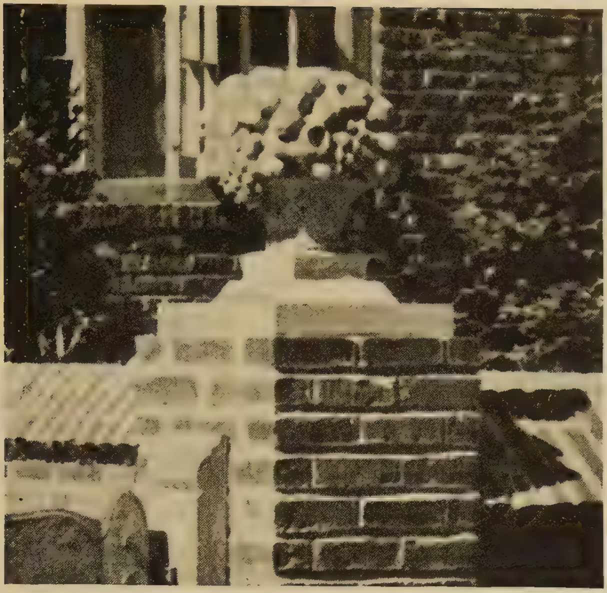


Leigh French, Jr.; H. D. Eberlein, associated

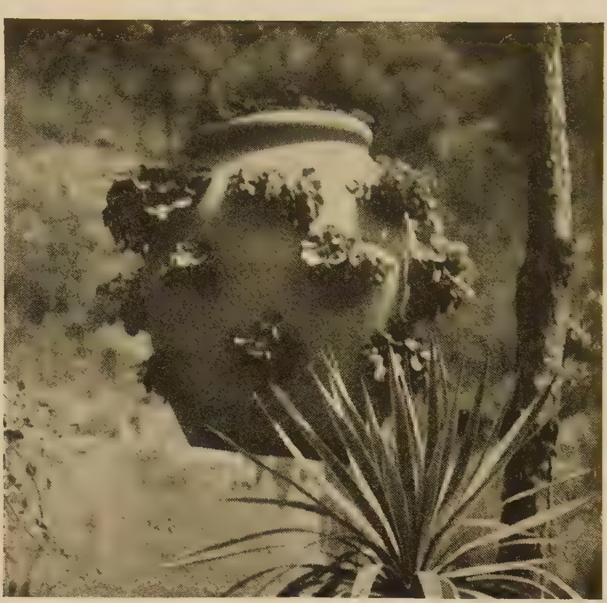
Schultze & Weaver

Office of John Russell Pope

Cass Gilbert

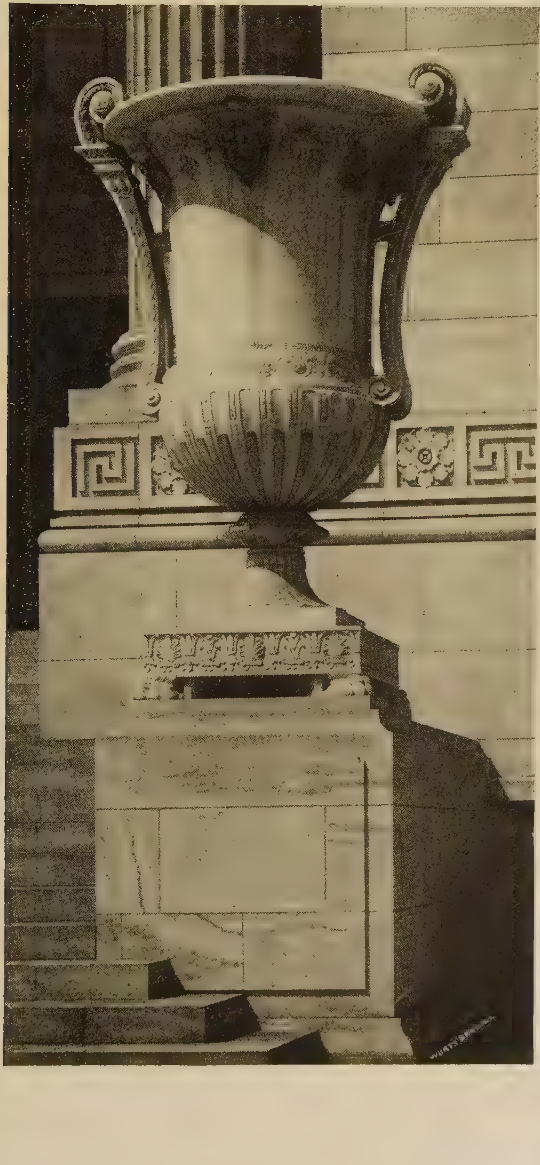


Andrew J. Thomas

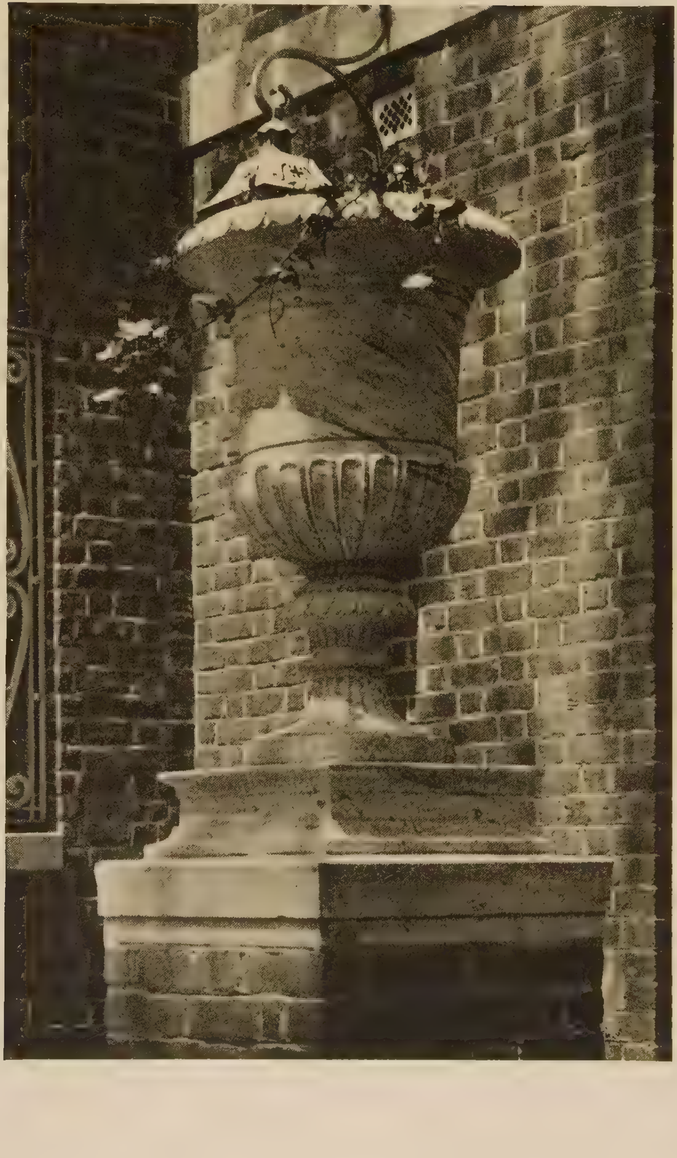


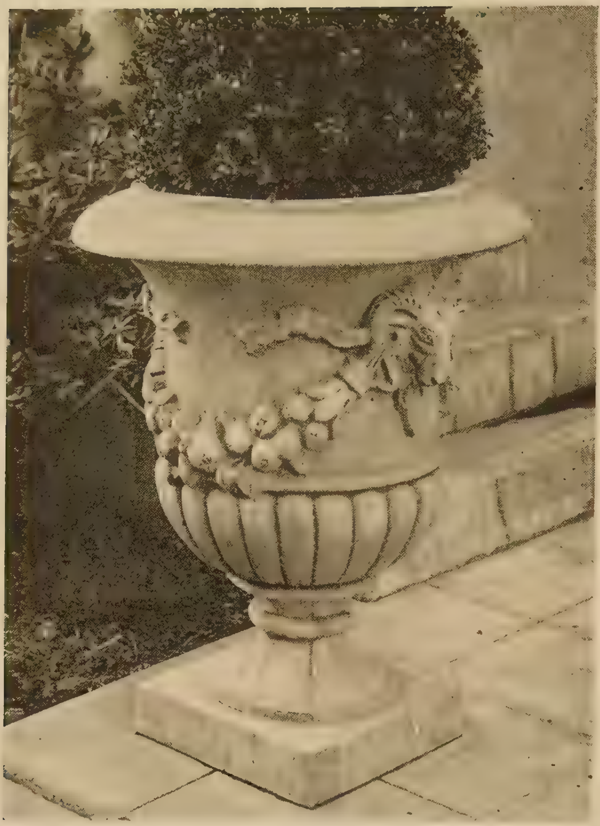
Carleton M. Winslow

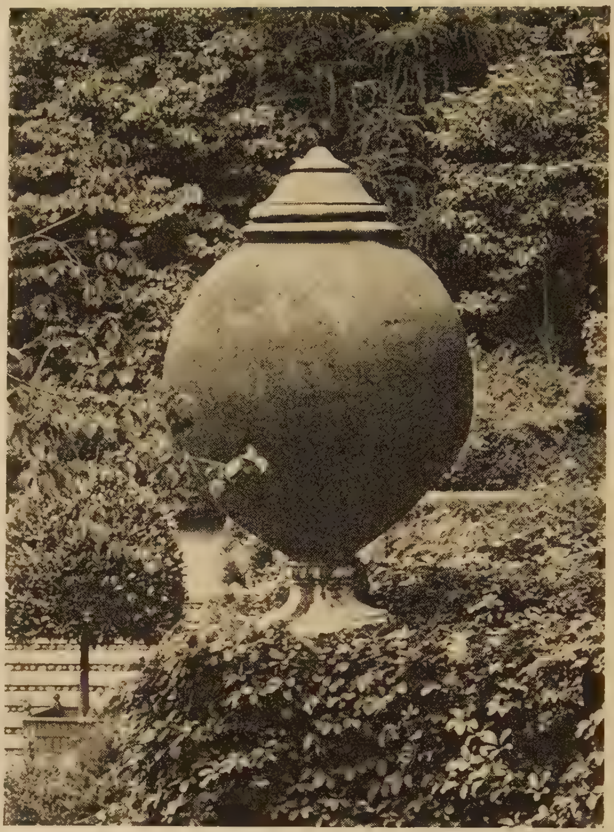
Carrère & Hastings



Davis, Dunlap & Barney

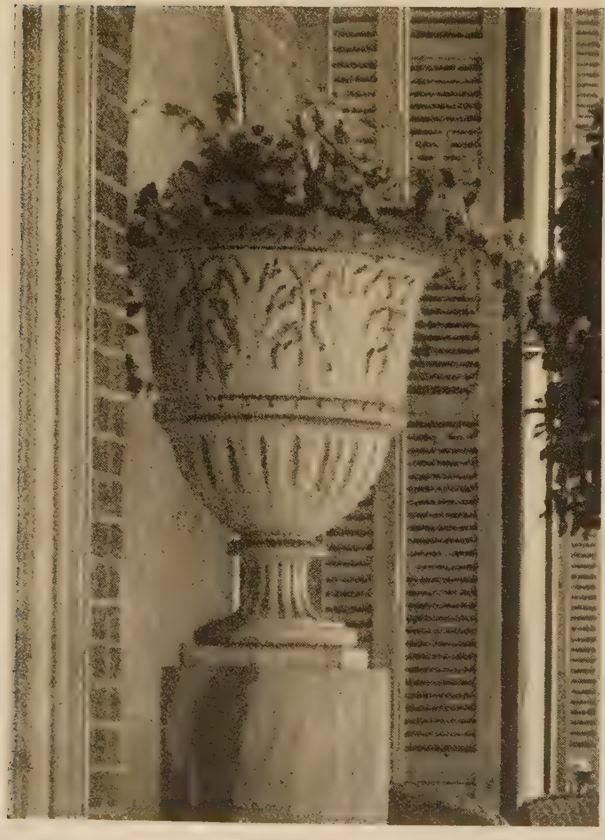




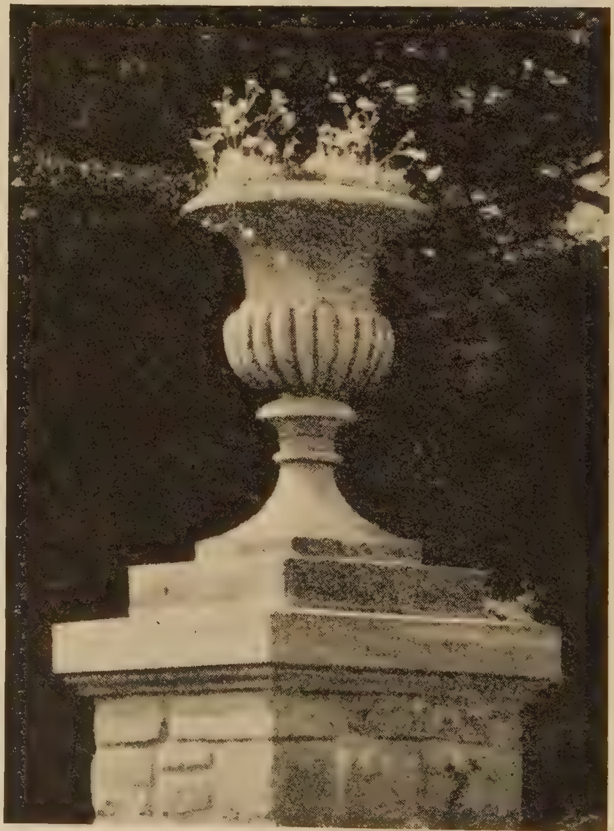


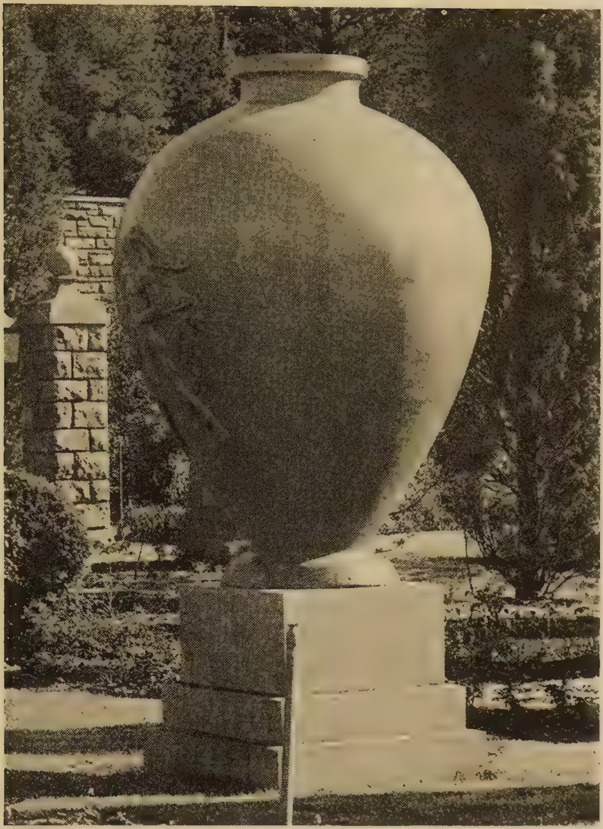
Carrère & Hastings

Office of John Russell Pope



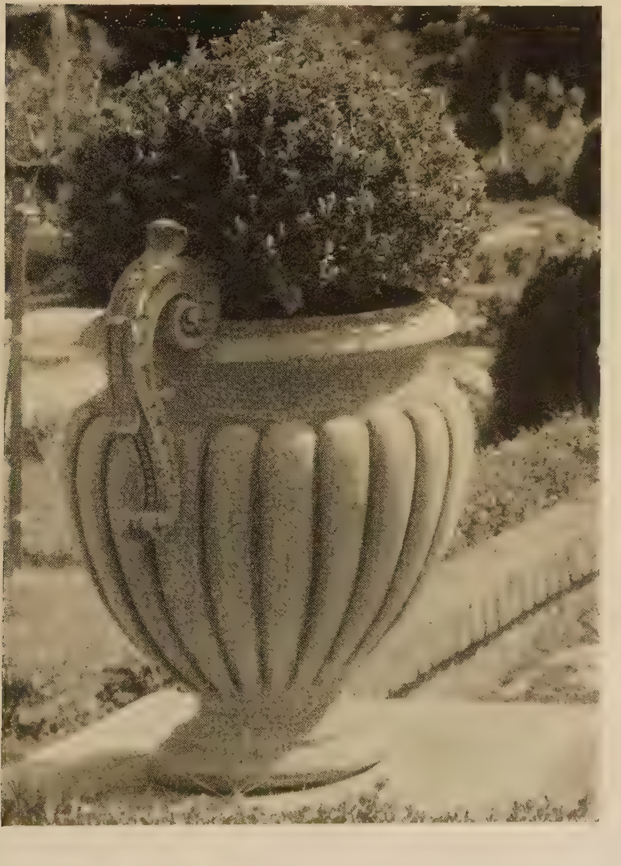
From a garden in Broadway, Worcestershire



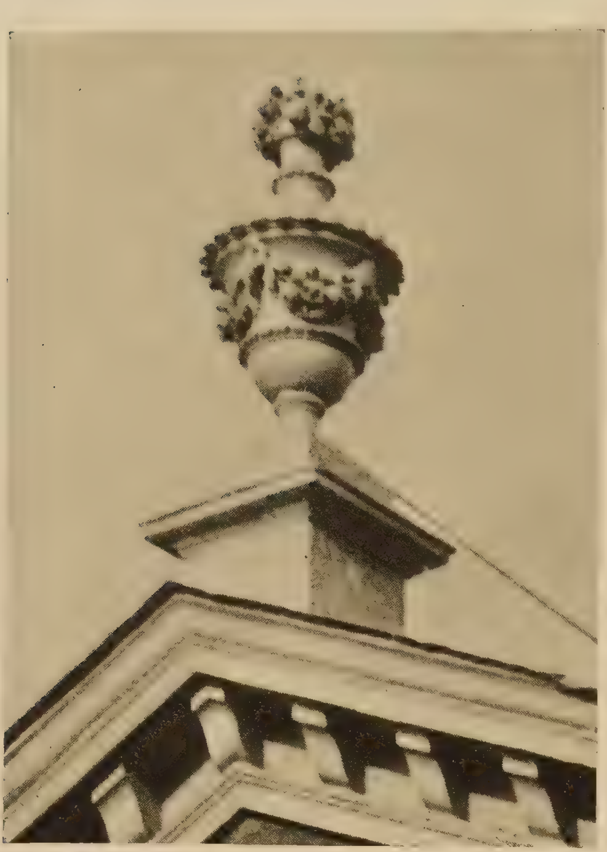


Charles W. Leavitt & Son

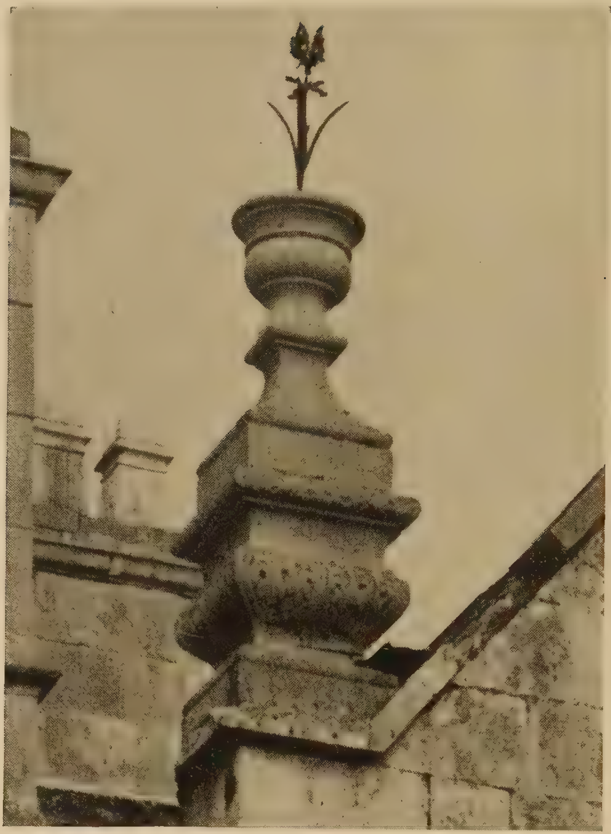
Leigh French, Jr.



Little & Russell

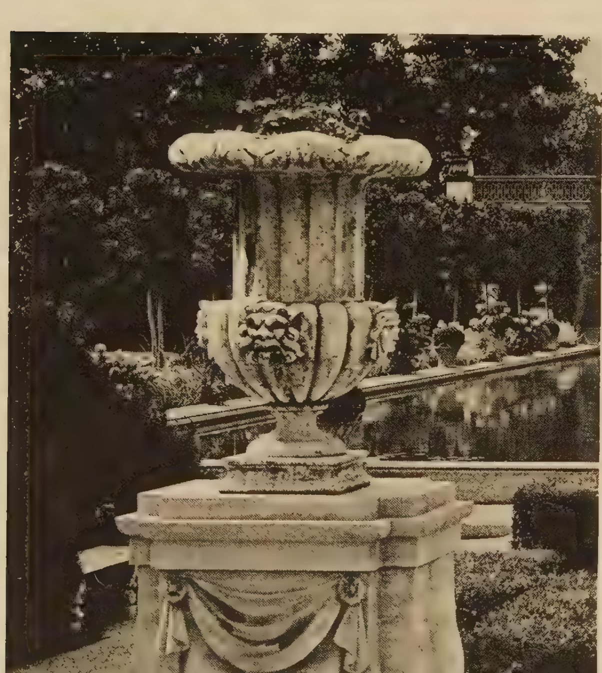


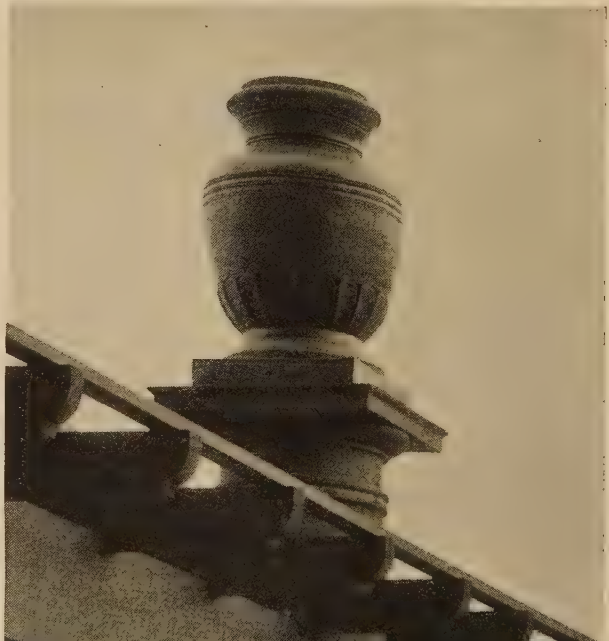
Eighteenth-century house, Gloucestershire

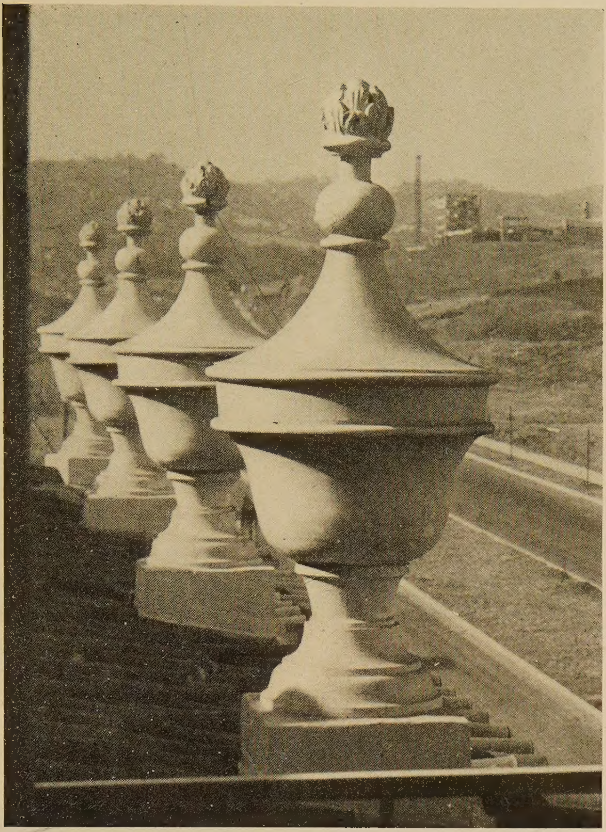


Chipping Campden, Gloucestershire

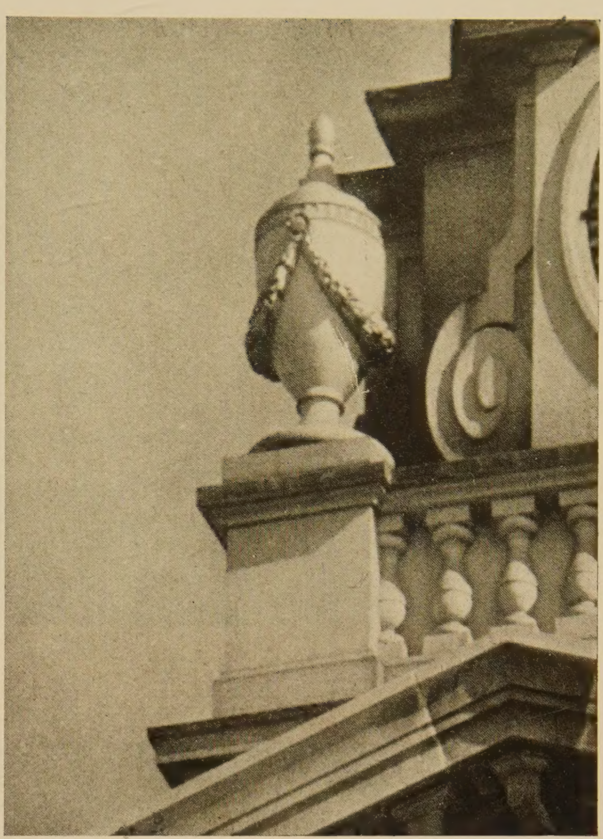
Arthur Loomis Harmon





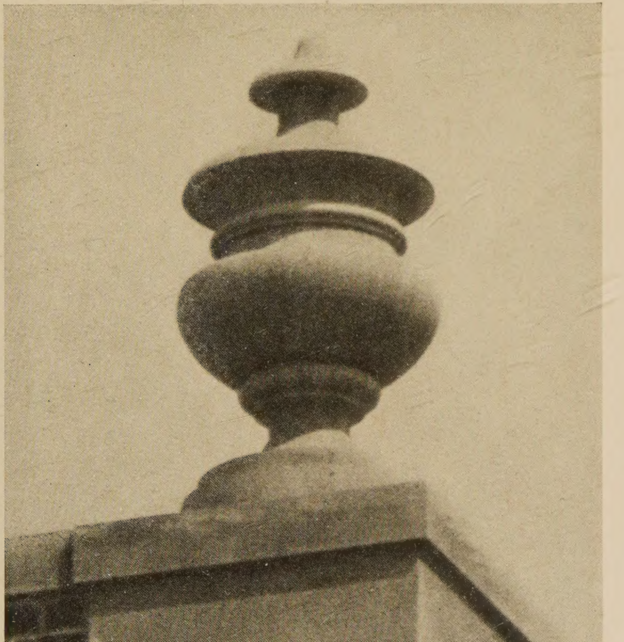


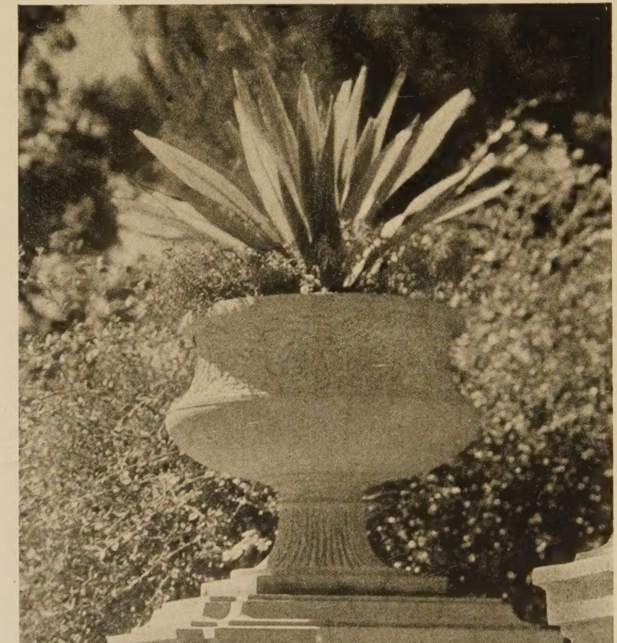
Gordon B. Kaufmann

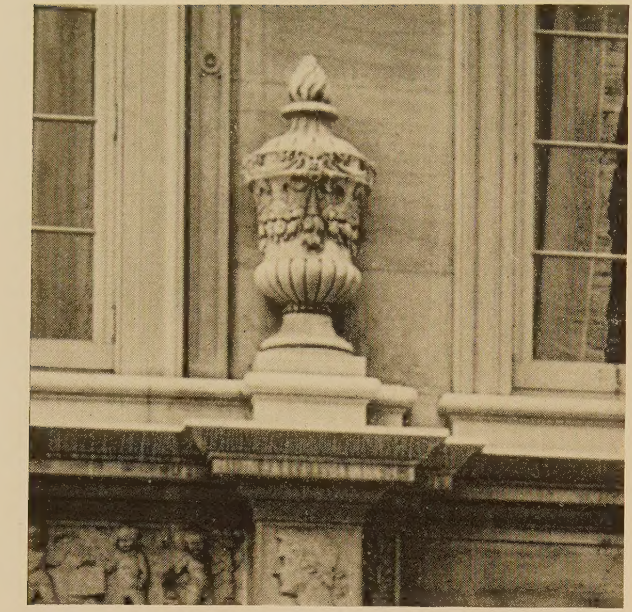


Kilham, Hopkins & Greeley

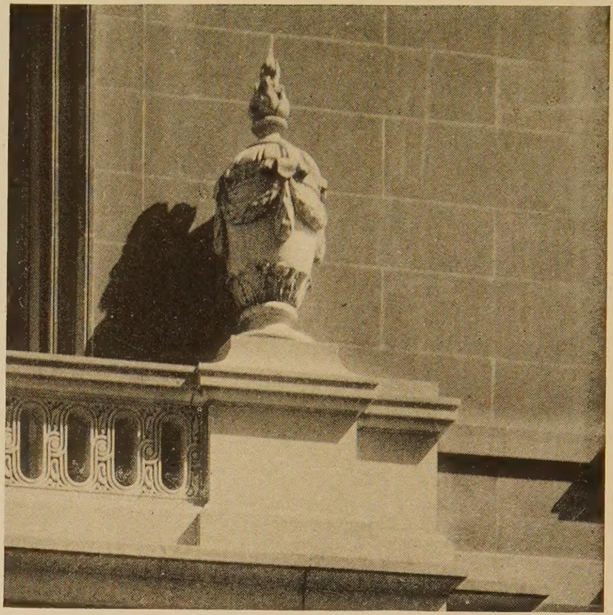
Guilbert & Betelle





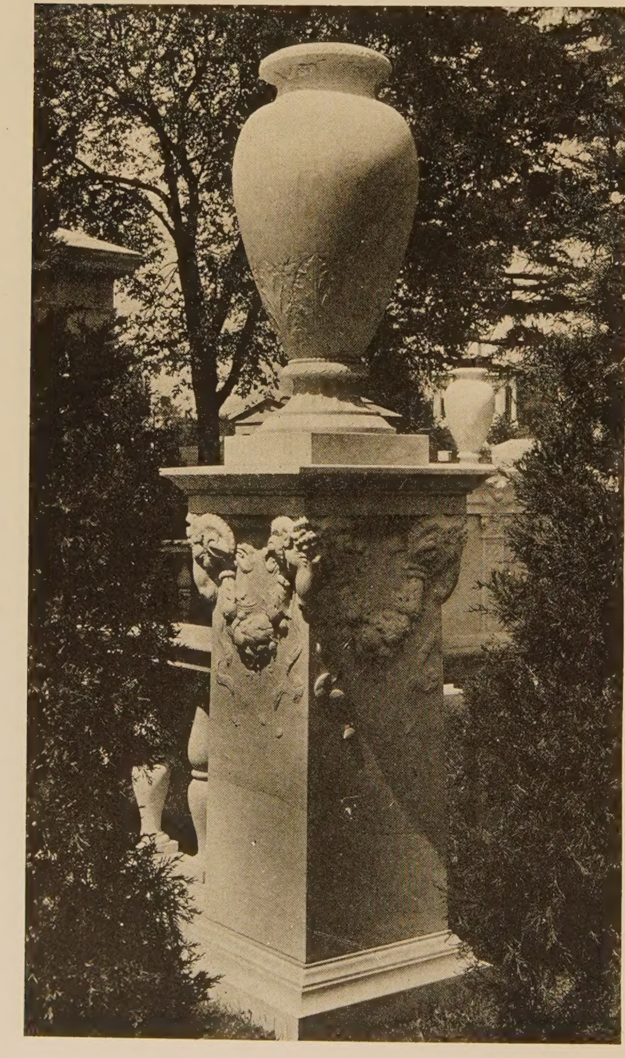


Sterner & Wolfe

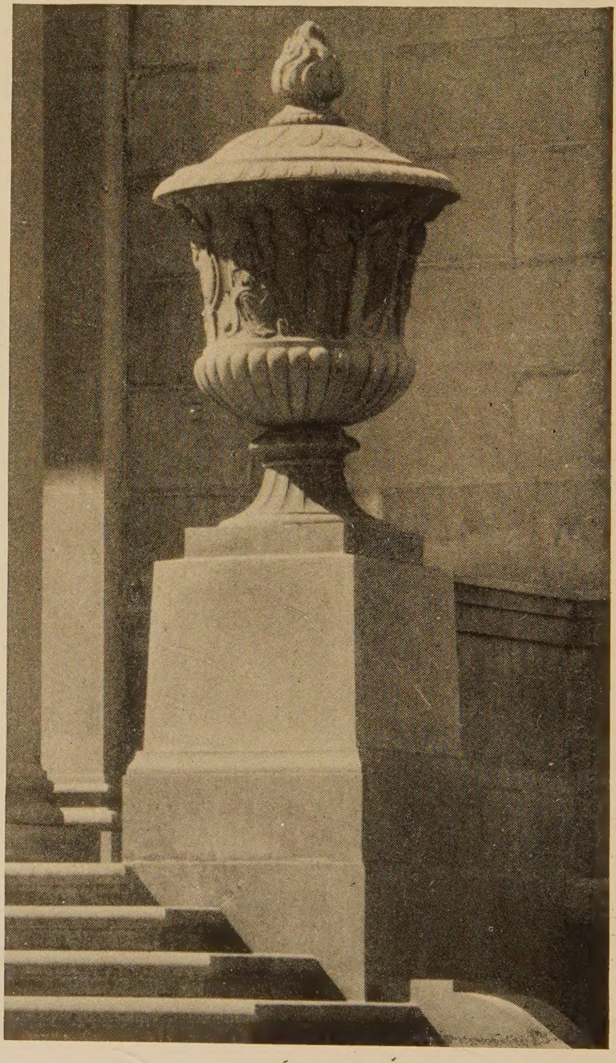


Horace Trumbauer

Carrère & Hastings



Walter D. Blair



THE ARCH OF TITUS, ROME
From the lithograph by A. W. K. Billings, Jr.